

# ARMOR



## THE ARMOR ASSOCIATION MEETS

U. S. Army Chief of Staff General J. Lawton Collins and U. S. Armor Association President Lt. Gen. Willis D. Crittenger observe a part of the day-long program at the 63d annual meeting of the organization of mobile warfare at The Armored Center, where 2,000 officers heard the Chief of Staff speak on the tank program.

JANUARY-FEBRUARY, 1952





*The Second World War*

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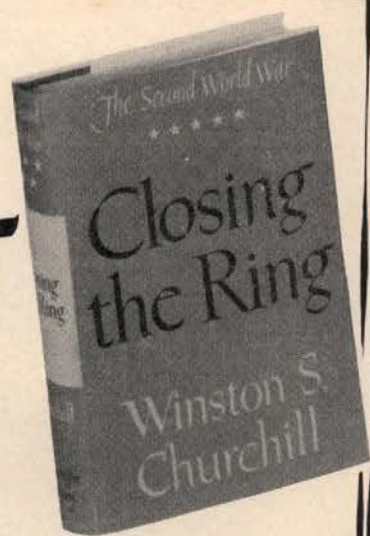
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## The United States Armor Association

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Cavalry Association  
(Established 1885)

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# ARMOR

Continuation of THE CAVALRY JOURNAL

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Volume LXI

JANUARY-FEBRUARY, 1952

No. 1

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# LETTERS to the EDITOR

## Mobility's Executors

Dear Sir:

In the July-August issue you raised a question: a name for the soldiers of our Arm. I am glad to know that you consider the question important. My experience bears this out. Morale is the sum of many factors not the least of which is loyalty to one's branch. There is no step more important in basic training than to instill in the heart of a soldier an intense pride in his unit. This is closely related to, and a part of, pride in his branch. The collective name by which soldiers of a branch are known is no small element in the problem.

I deeply regret the decision that substituted the name "Armor" (a mechanical device applicable to all arms) for "Cavalry" (a name signifying the mobile combat arm). The nomenclature has become further confused by employing the term "Armored Infantry" for soldiers who fight mounted (as well as dismounted). Soldiers who fight in tanks and in all other vehicles which accompany tanks on the battlefield are mounted soldiers. Mounted soldiers are cavalrymen in the true sense of the word. Mounted soldiers are "troopers." The Department has seen fit to retain the designation "cavalry" for certain regiments designated for reconnaissance roles although these regiments have long since adopted iron horses. Nevertheless it is recognized that their role is mounted. The same recognition should be accorded those elements of divisions whose role is mounted combat. "Tankers," "Armored Infantry," "Mechanized Cavalry"; they are all mounted soldiers, they are all cavalrymen, they are all troopers. If we accept the premise that role in battle determines branch of service (not some mechanical device), then too our "armored" divisions as well as our "cavalry reconnaissance regiments" are Cavalry units.

There are still some who propose the restitution of Cavalry in the form of very small units equipped with horses and mules (primarily pack animals) for use in restricted terrain. I fully concur with their proposal to use animals where appropriate but I deeply deplore the implication that Cavalry has passed on (notwithstanding the Act of Congress). Cavalry lives today more invaluable than ever because battlefield mobility has reached an all-time importance. The role in battle always performed by Cavalry is performed today by modern troopers—soldiers who close with the enemy mounted.

The tremendous expansion of our forces in World War II accompanied as it was by the development of "armor" for all branches of the service resulted in a confusion of terms. At the same time the substitution of mechanical for animal transport both on and off the

battlefield added misunderstandings. This became most apparent in confusing the type of mount with the role in combat. To add to the confusion some refused to accept the evolution of Cavalry and doggedly demanded the retention of horses to perform impossible tasks, so that the War Department was forced to create a new Arm which wasn't new at all—it is the old Arm remounted. Many new faces appeared, most of whom came from Infantry, Artillery and Engineers. They brought with them many of the traditions of their former branches which were absorbed by the revitalized Cavalry now masquerading under the name of Armor. But as the dust of World War II settles and we can look back more calmly on that scene, we see all too plainly that the role of the mounted arm as played on the fields of Central Europe was merely a modernized cavalry role with "armored" soldiers re-enacting the part of traditional cavalrymen—troopers, if you please.

I suggest the retention of the name which denotes a "way of fighting," which distinguishes the combat soldier who closes mounted with his enemy (not a piece of steel, designed as a shield) — the name Cavalry for the branch and Troopers for its soldiers.

MAJ. GEN. R. W. GROW  
Army Attache

Moscow, Russia

## A Kind Word

Dear Sir:

I find your publication interesting and most informative. The timely articles are ably presented and contain much worthwhile material. It is undoubtedly the best service magazine I have seen and is of particular value to the armor and infantry officer. The excellent studies on combat operations

here in Korea help to establish beyond any possibility of challenge the fact that effective utilization of armor, even under the most adverse conditions of terrain and climate, is always possible provided initiative and imagination are present in the combat leader.

LT. COLONEL LESTER BIELER  
Asst. Secy. Gen. Staff, 8th Army  
APO 301

## Armor Combat Badge

Dear Sir:

The Infantry has its Combat Infantry Badge, the Medics have their Combat Medics Badge, the Artillery has a proposed Combat Artillery Badge, and what does Armor have? I can answer this as well as any Armor man can also answer it, *nothing*.

The tank companies and the tank battalions are all either integral parts of infantry regiments or attached to the infantry divisions. With this close association with the infantry it is only natural that Armor is working in a close support role. Also we often find ourselves leading task forces which move many meters behind enemy lines. When the tanker returns from these missions he finds that his infantry teammates who haven't already received their Combat Infantry Badge are lined up and have it presented to them.

What does the tanker get? Nothing for him because he can't qualify for the Combat Infantry Badge, and Armor has nothing to give him.

I firmly believe that a distinctive badge for Armor is a must. It would be a definite boost to the morale of all tankers in Korea. Also it would show our brothers in arms that Armor also has its distinctive badge.

I think you are the people to start the ball rolling and am counting on you to keep it rolling.

LIEUTENANT WILLIAM Q. JOHNSON  
Tank Co., 32d Infantry Regt.  
APO 7

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**Rates:** See bottom of contents page.



## One of Our Functions

Dear Sir:

Enclosed please find a check for the renewal of my subscription to our wonderful magazine.

As a reservist I have found this magazine invaluable to me in keeping abreast of the latest trends and developments in armor. Now that I'm on E.A.D. I know that our magazine will even be of greater value.

LIEUTANT WILFRED BAUMANN  
Co. C, 33d Medium Tank Bn.  
Ft. Knox, Ky.

Dear Sir:

As a subscriber to ARMOR of only one year, I find that your magazine is an excellent periodical dealing with mobile warfare. As a member of a reserve artillery unit, ARMOR provides a much needed link between me and my own branch. This magazine is a must for all reservists who desire to keep up on the latest developments in armor.

I am inclosing a check for \$8 with which to renew my subscription for two years.

LIEUTENANT ROBERT P. BAUGHMAN  
Norman, Okla.

• ARMOR is pleased to have this assurance of the fulfillment of its mission and departs from its policy of not printing self-praising comment as a reminder to those in the reserve components who may see the magazine only occasionally that here is a rallying point for their part-time military interests. The reason ARMOR does not indulge in the printing of letters of comment praising the magazine lies in the fact that this space is considered a part of the medium of professional discussion which is our publication, and should be utilized for comment on subjects remunerative to the reader. In addition, so great a number of these letters are received that the entire quota of space each issue could be devoted to them. All this does not mean that affirmative comment is not appreciated. It is, and it adds up to a part of the inspiration behind this magazine.—Ed.

## Old Bill Turns Up

Dear Sir:

The lost is found! Your editorial in the September-October 1951 issue, recently read, seeks the whereabouts of Remington's pen and ink sketch "Old Bill." To the best of my knowledge I have the front view sketch; I know nothing about the hind sight. "To the best of my knowledge" is used advisedly, because: (1) it has always been my understanding that the picture I have is either the original or a duplicate copy of the picture which my father, Louis C. Scherer, received from the artist, and (2) this picture was carefully packed away in my household things when I last went overseas.

If ARMOR requires the use of the picture, I would be more than happy to loan it (as soon as I can get at it), provided that I can have positive assurance of its safe and early return, somewhat under the same arrangement that it was once previously loaned to the *Cavalry Journal* for remaking the cover plate. I believe that there was no question of ownership at that time.

I am not prepared to donate the picture to an office file or to a museum of the future. Nor do I intend to sell it. I would be willing to donate it to an existing suitable museum when my family and friends no longer enjoy the lively reminiscences which "Old Bill" evokes. Have no fear that he will lack for a good home and admirers once we set up housekeeping again. I don't know what you think of him, but I've never thought of him as much of an office man or as a museum piece. He's always looked most at home with several horseflies talking over old times, with the aid of a couple of short beers and an occasional "Up Garry Owen." But then, I may be wrong. I will say though, when I showed him the first *Cavalry Journal* where he didn't make the cover, I thought that there was a look of foreboding on his face. I haven't been able to ask him what he thought

about ownership claims coming up after fifty years of undisputed possession.

COLONEL KARL L. SCHERER  
Armed Forces Staff College  
Norfolk, Va.

Dear Sir:

My brother, Col. Karl L. Scherer, has sent on to me his letter to you in reply to your editorial on the Remington sketch in the September-October issue. While I feel that he has covered the situation and am in accord with what he has said, I wish to add what I know of the picture's history, particularly since I was once the owner of it.

The pen and ink sketch of the mounted soldier was in my father's possession when I first saw it and was seen, no doubt, by those who visited our home. The artist and my father were friends and I was told that Remington at some time around the turn of the century gave the sketch to my father and that when my father later became editor of the *Journal* he decided to use it on the cover of the magazine and asked permission of the artist to do so.

This would account, perhaps, for the entry in the Association meeting proceedings in 1903.

I recall that my father told me that the Association had borrowed the sketch on what I thought was more than one occasion to have new plates made. When he gave me the picture after his retirement in 1928 he reminded me that it should be made available if the Association wanted it for this purpose again. The sketch was one of my prized possessions from that time until I transferred from the Cavalry in 1935. I then passed it on to my brother who was still a Cavalryman. During the period I had the sketch it was seen by many persons familiar with it, including, I am reasonably certain, several members of your present Council. No question of ownership was raised then, nor had it been during my father's lifetime.

COLONEL HARRIS F. SCHERER  
Headquarters Seventh Army  
APO 46

• ARMOR set out on the search for Old Bill with visions of the poor fellow lost in some attic, unknown and unrecognized through the years. With Association records as the only documentation to come to light after a long and careful search, it was somewhat disconcerting to have the answers to a difficult question appear so close to home. ARMOR (and certainly the Remington Museum and historians) is gratified to round out an interesting story on a subject of such general interest to the branch, and trusts that, in its enthusiasm to promote the history and tradition of the mobile arm, no reflection was cast where none was intended.—Ed.



Louisville Courier Journal

## THE COVER

The appearance of the Chief of Staff of the United States Army in a major address before the Armor Association was an auspicious occasion for the organization of mobile warfare and for the arm. General Collins' remarks were at once a tribute to armor's past, a confirmation of the present and an inspiration for the future. His presence with a notable gathering of branch members was an honor appreciated by the mobile team.



Col.  
Abraham  
Arnold  
1885-1887



## r econnoitering

When the 63d Annual Meeting of the United States Armor Association (continuation of the United States Cavalry Association) opened on January 11th at Fort Knox, the fifteenth president in the history of the professional organization of mobile warfare was presiding.

In this issue bearing the report of the largest meeting in the Association's history it seems appropriate to look back over the years and round up for the membership some of the story surrounding the group of distinguished soldiers who have served in this important post—for few of us have been around long enough to know the tale at first hand.

On November 9, 1885, when a group of forward-looking cavalry officers got together at Fort Leavenworth, Kansas, to put under way this first of the combat arms associations, our branch was quite small and its members were scattered around the country. However, a home base was set up at the Service School at Fort Leavenworth, and Colonel Abraham K. Arnold was elected the first President.

The wide distribution of cavalymen and the somewhat more restricted communications of the time inspired the establishment of branches of the Association at West Point, New York, and Fort Reno, Indian Territory. Each of these was presided over by a Vice-President and Secretary.

The practice in the early years of meeting was for the members to assemble and read original papers on various military subjects, which were taken under discussion by the membership. Distribution of this material resulted in the publication of the first journal to serve as the medium to reach all members. *The Journal of the United States Cavalry Association* was launched in 1888.

General Wesley Merritt became President of the Association in 1887, a post he was to hold until 1907. His 20-year tenure is the longest period of all in the position.

Undoubtedly several mathematically inclined members have been scratching their heads over several things by now. For example, the Association was organized in 1885. That makes it 66 years old this past November. Why is this the 63d Annual Meeting? The magazine was put under way in 1888. That makes it—let's see—64 years old. Then how come this issue is the first of Volume LXI? And if the present President is the fifteenth, why do those two sets of seven photos line up to such a balanced fourteen?

All of this is an interesting story. To take the last item first, a check of the captions next to the photos on this page will show that General Carter played a return engagement. Like Cleveland, he had split terms.

The matters of meetings and volumes are based in the same reason. The Association simply ran into difficult times occasioned by something with

Brig. Gen.  
Wesley  
Merritt  
1887-1907



Brig. Gen.  
William  
Carter  
1908-1914  
1917-1921



Brig. Gen  
James  
Parker  
1915-1917



Maj. Gen  
Willard  
Holbrook  
1921-1924



Maj. Gen.  
Malin  
Craig  
1925-1926



Maj. Gen.  
Herbert  
Crosby  
1927-1930





## The Association Presidency

which we're all familiar—war. Not much over a dozen years of age, it came up against the Spanish-American War. The result—all members busy with primary duties requiring the sacrifice of annual meetings and publications for the years 1900 and 1901. The first World War produced another blank year in 1919. Thus we have three years deducted from the 66 years of organization, to make 1951's Annual Meeting the 63d. And three years chopped from 64 since the appearance of Volume I, Number 1, leaves us with LXI.

The Spanish-American War lapse brought a crisis in Association life, and it was only a strong letter from General Merritt, written at sea, and the efforts of a few members that kept things going.

It is interesting to note that six of the Association Presidents were Chiefs of Cavalry—Generals Holbrook, Crosby, Craig, Henry, Kromer and Herr. One of these, General Malin Craig, was Army Chief of Staff from 1935 to 1939, succeeding General MacArthur and preceding General Marshall.

Only one of the Presidents served a tour as Editor of the magazine. General Carter, who served the split term in the Presidency, as Captain Carter held the post of Editor-Secretary from 1892 to 1897.

The Presidency of the Association is an important position. Elected by the membership from among the senior professionals of the mobile arm, the President's guidance and prestige are reflected throughout the organization. The contribution made by the fourteen men whose pictures appear on this page is immeasurable. As a group they represent the tradition, the mission and the accomplishments of their arm over a substantial period in the history of the United States Army.

The demands on the time of these soldiers are well known to all. Their efforts on behalf of the Association are an indication of their high interest in this special field and a tribute to their qualities of leadership.

The Association is fortunate again in having Lt. General Willis D. Crittenger as its President for 1952. His career in the mobile arm is in concert with everything the Association stands for. Of special significance has been his lengthy association with the development of mechanization in the United States Army.

Through sixty-six years the members of the Association have set a high standard in the selection of their Presidents, establishing a precedent to inspire the organization through the coming years.

*The Editor*



Maj. Gen.  
Guy  
Henry  
1930-1934



Maj. Gen.  
Leon  
Kromer  
1935-1938



Maj. Gen.  
John  
Herr  
1939-1945



Maj. Gen.  
I. D.  
White  
1946-1947



Maj. Gen.  
Ernest  
Harmon  
1947-



Maj. Gen.  
Hobart  
Gay  
1947-1949



Lt. Gen.  
Willis  
Crittenger  
1950-





Photos by U.S. Army

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*Armor personnel from around the country joined the great concentration of branch members at The Armored Center at Fort Knox on January 14th for a truly memorable gathering of the mobile arm—the 63d annual meeting of the United States Armor Association. The largest assemblage of members in the history of the professional organization of mobile warfare was on hand for a program climaxed by the address of the Army's Chief of Staff. Two thousand officers heard General Collins give the official and intimate story of our tank program in these very critical years*



*address of*

**GENERAL J. LAWTON COLLINS**

*United States Army Chief of Staff*

**P**ERHAPS the two most important military tactical developments—aside from the use of atomic power—of warfare in our time are the extensive and often decisive roles played by air power and armor. Yet the ancient arms of infantry and artillery have not been superseded primarily because modern battle is so complex that no single arm can win a decision.

Victory is won only by a proper combination of various powerful weapons—primarily infantry, artillery, armor, and air properly supported by the other arms and services. It is as important to recognize the importance of the battle team as it is to recognize that much of the success of the team depends on the support it receives.

Bearing in mind, then, that our emphasis must always be on the battle team, I should like to talk to you today about the member of the team closest to your hearts—Armor.

I have an exceptionally warm spot in my heart for armor because I had the great privilege of having the 2nd, 3rd, and 5th Armored Divisions under my command in the VII Corps for extensive periods from Normandy to the Elbe, and the 7th, 8th, and 9th were with us at one time or another.

As a matter of fact, it was the great tradition established by our Armor during World War II that motivated me to press for the establishment of "Armor" as a basic branch of the Army. As most of you know, there had been a tendency in recent years after we had armor units organic in the Infantry Regiment and in the Infantry Division, to amalgamate armor and infantry so closely as to lose the designation of "armored division."

I personally opposed this. I felt we would always need armored divisions. So long as there is ground to move on we will need troops specially trained, equipped, and organized to combine rapid mobility and great shock action. I know of no new weapon or concept which will lessen our need for armored units.

As you know our postwar emphasis on armor led to the assignment of a tank battalion as an organic unit of the standard infantry division, and a tank company as an organic unit of each infantry regiment. This means

*before*

*The United States Armor Association*



that our infantry divisions now have 140 medium tanks, or more mediums than we had in our light armored divisions during the early stages of World War II.

One of my first acts as Chief of Staff was to appoint the Department of the Army Armored Panel to button up all the loose ends of the tank program. As you know our current tank program, in large measure, is based upon their findings.

Not only do I welcome this opportunity to tell you something about the Army's tank program, but I am happy to have been invited to address such a fine assemblage of leaders. In my opinion, the successful operation of armored forces requires great qualities of leadership—bold action, swift movement, and skillful maneuvering.

Since I have mentioned leadership, I should like to take a moment to pay tribute here to one of the great leaders of World War II—Major General Maurice Rose of the 3rd Armored Division.

In March 1945, my VII Corps, in the First Army, had captured Cologne and with the V and VI Corps to the south were closing in on the broken German forces west of the Rhine. The VII Corps was given the northern section of the Remagen bridgehead and was told to attack to the east. I decided to crack the German line directly with armor instead of planning to make a break-through first with Infantry. The 3rd Armored was to lead out over the whole Corps front, followed on the right by the 104th Division and on the left by the 1st Division. I ordered the 3rd to proceed rapidly to the east by-passing resistance as far as practicable, leaving it for the infantry divisions to clean up as they followed.

Our general plan for the 3rd Armored was to give it successive objectives, with no particular time schedule but with the distant objective of Marburg.

The attack jumped off on the 25th of March. The 3rd Armored ran into considerable resistance in the form of German armor, road blocks and mine fields, but on the 28th, after four days of operation, Marburg fell into our hands. Then the First Army changed our direction of advance from east to north; we were ordered to advance to Paderborn to join with elements of the American Ninth Army which

had crossed the Rhine to the North.

As usual, the 3rd Armored was to lead the way but, as the front was too great for one division, we decided to give our Corps Cavalry, the 4th Cavalry Group, a narrow zone to the west of the 3rd Armored.

On the night of 28-29 March, I gave instructions to General Rose, who had assembled his principal subordinates at Marburg, to seize Paderborn, one hundred miles to the north, with a minimum of delay. Without



**Maj. Gen. Maurice Rose** "... was one of our great armored division commanders; one of those great leaders who were always up front. I think he exemplified the true spirit of armor."

batting an eye, he coolly announced to his commanders that the 3rd would be in Paderborn the following night.

At dawn the next day, the 3rd Armored roared to the attack. It encountered only light resistance at the start, but by afternoon had run into suicide groups from the crack German tank training center at Paderborn, equipped with Tiger tanks and Panzerfausts. Night called a halt to the furious engagement, but not until the 3rd Armored and the 4th Cavalry Group had driven 90 road miles almost to the outskirts of Paderborn—so far as I know, the greatest single day's advance against opposition for any unit in the American Army.

About dusk that night, one of General Rose's task forces, about to enter Paderborn, was hit by one of the skill-

ful German tank detachments from Paderborn. In characteristic fashion, General Rose was with one of the leading elements of this column, which was cut off by the Germans. He was killed that night.

I have difficulty, even now, concealing my emotions when I talk about Maurice Rose. He was one of our great armored division commanders; one of those great leaders who were always up front. I think he exemplified the true spirit of armor.

I could go on and on about General Rose and the 3rd Armored and the other commanders and other armored units of the VII Corps, but I want to tell you something of our tank program. As you remember, at the end of World War II, the nation reverted to a peacetime economy. Production was stopped on military goods and concentrated on civilian products. Army appropriations were drastically cut and the reduced budget permitted only limited funds for research and development and almost none for production. The budget for research and development on all types of automotive equipment, of which tanks were only a part, averaged about \$5,000,000 a year. When this is compared to Chrysler's R & D budget of \$25,000,000 for the same period, you see how little we had. So as to best utilize those funds which were available, development was concentrated on major components, such as engines, transmissions, tracks, and armor plate.

During this same period our small budget permitted only limited progress in the development of new tanks. A new light tank was designed to mount the same caliber gun as was used on our World War II medium tanks, and design studies were prepared on medium and heavy tanks. The alternative was to spend all of our money on the development of only a few complete vehicles, which might be obsolete before we had to use them. Such a program would have meant a new fleet of vehicles made up of wholly unproven components or a new fleet that differed from World War II models only in the "trim." We felt that a program of that nature would have been shortsighted, and we chose a more basic and longer range solution.

You are all familiar with our decision to build a family of three tanks—a light-gun tank, a medium-gun



tank, and a heavy-gun tank.

When the Korean war broke in June 1950, we had no light tank in production, and the tooling for our World War II model had been disassembled or reconverted to civilian production. No medium tanks were being produced but we were modernizing some 800 of our Pershings by equipping them with a newly developed 810 HP engine. In the medium field, the T42 was well along in the design stage. The new heavy was still only on paper.

Our problem then was to decide which tanks should be placed in production, since it had become obvious that our stock of World War II models and our reconverted Pershings would not see us through this period of emergency. No matter which models we chose we would have to retool and set up new facilities.

There were some advantages in going back to World War II models. They had been thoroughly tested, and industry knew how to build them. The disadvantages were that they did not have the fire power, maneuverability, and armor protection which we knew we could give in our new tanks. But, we knew if we went into production on our new designs, we would have many troubles in the final development stages. Each of them had many unproven components which had been insufficiently tested or had not been tested at all.

After a careful review of all the factors, we decided that since the prototype of the light tank had undergone extensive testing we could afford to gamble on it. In the medium field we were not in so fortunate a position. However, we still decided to go ahead and use the new high velocity 90mm gun. To keep the gamble to a minimum, we decided to take the newly designed turret and mount it on the chassis of the combat proven General Pershing. This combination, now known as the M47, was placed in production late in the summer of 1951.

We were also forced to take other gambles. Since twelve to eighteen months' lead time is required from the time a contract is let until the first tank comes off the production line, we decided to forego the normal procedure of building pilot models for engineering and service tests. We felt that if any deficiencies occurred they could be corrected in the early phases of pro-

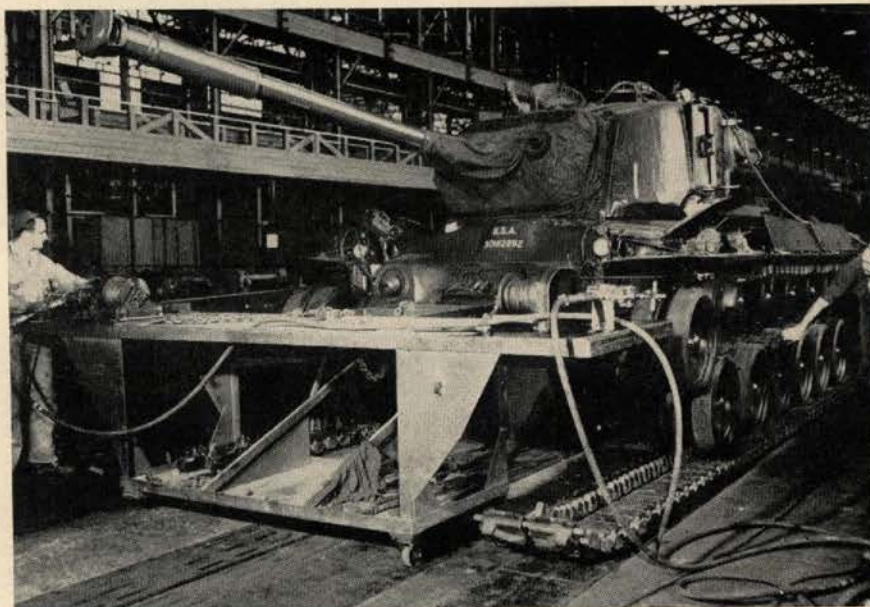
duction, or modified later before issue to troops.

It is history now that we did find some serious deficiencies in both the new light and medium tanks. And, as was expected, they were generally confined to the turret components. Early tests revealed fifteen major deficiencies in the medium tank and about the same number in the light tank which would have to be corrected before these tanks could be considered suitable for general issue to troops.

Most of the deficiencies could not have been foreseen and were to be ex-

outcome of these tests will further prove that our new tanks are better than anything we have had before and more than a match for their Soviet counterparts.

During the period that we have been working to correct the various deficiencies, both lights and mediums have continued to roll off production lines. We anticipate the early models will have their deficiencies corrected by July 1952. Despite our troubles, we are still a year ahead of the time schedule we would have been on had we waited for complete test and development before going into produc-



"It is history now that we did find some serious deficiencies in both the new light and medium tanks . . . During the period that we have been working to correct [them], both lights and mediums have continued to roll off production lines . . . We are still a year ahead of the time schedule we would have been on had we waited for complete test and development . . . it has been worth the gamble."

pected in the production of untested vehicles. In the light tank, for example, two unusual deficiencies existed. One was an engine failure, the other a torsion bar failure; both were traced to manufacturing errors. Changes in personnel since World War II had created critical shortages of certain types of skilled workers, and the deficiencies emphasized the importance of adequately training the workman in the plant.

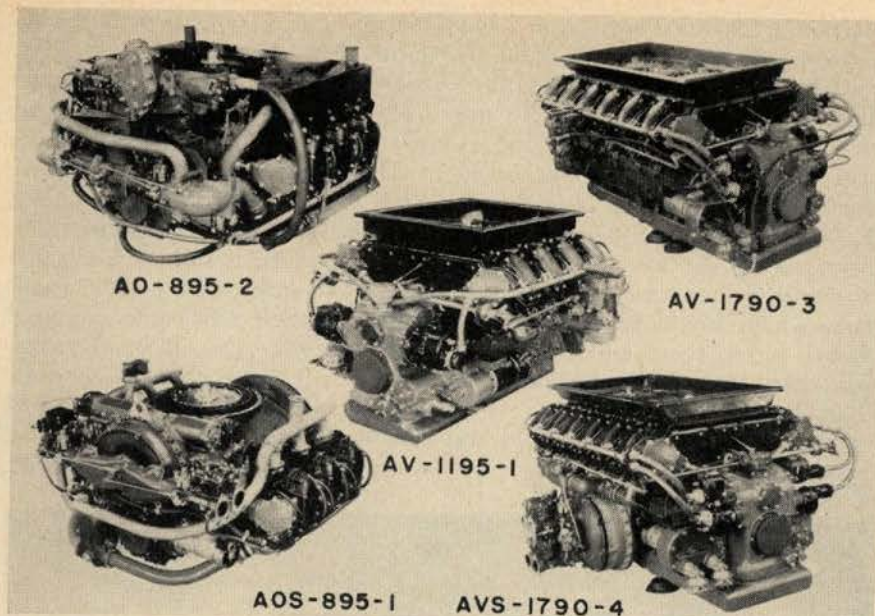
All of the deficiencies which I have referred to have been corrected in the vehicles now coming off the production lines. The modifications of the medium tanks are now being tested at Camp Irwin, California, and the light tanks are to be tested at Camp Drum, New York, the latter part of this month. It is our belief that the

tion. In other words, it has been worth the gamble.

As for our heavy tank program, it has not had as high a priority as the light and medium programs. However, limited production of new heavies is scheduled to begin early this year. Initial testing of the pilot is being conducted at Aberdeen right now.

I think one of the greatest advances in our tank program is increased standardization. During World War II our medium tanks were powered by six different types of engines. In addition our cargo tractors and self-propelled artillery were powered with still another type. The supply, maintenance, and training problems were terrifically complex and demanded simplification.





"We took steps to develop a family of engines and transmissions that could be used in all types of military vehicles . . . This is . . . paying great dividends."

We took steps to develop a family of engines and transmissions that could be used in all types of military vehicles. As you know, this action is already paying great dividends. We are using the same power plant that is in the new light tank in ten other vehicles. The power plant that is used in the medium tank is used in four other combat vehicles. This standardization of components results in savings in development and testing costs and reduces the spare parts required in the pipeline and by the different echelons of maintenance. It cuts down the number of engines on which mechanics must be trained. This saves training time which in turn reduces training and administrative staffs and increases the number of men available for combat units.

And these new 810 HP military air-cooled engines which we have standardized are almost as cheap as the 500 HP liquid-cooled commercial engines we used in World War II, and our studies prove that the cost per horsepower is 10-25 per cent less than the World War II engines. Some of the air-cooled engines do use more gasoline which is a logistical drawback, but we are making modifications which will reduce gas consumption with those engines.

Many other components have been standardized too, and many additional economies will result. For example, our tank companies and battalions equipped with medium tanks will use the same type carburetor in the tanks

and in tank recovery vehicles. This means only one spare carburetor is required where two were formerly needed. Since the unit cost is \$175.21, it is a simple problem in arithmetic to determine the over-all Army saving.

From time to time there have been statements to the effect that our tanks are no match for the Russians'. Results obtained in Korea prove otherwise. Our Patton tanks in action there have been more than a match for the Russian mediums. Even our old M4 Sherman tanks held their own with the tanks and self-propelled guns employed by the enemy thus far.

It is not generally understood why

our armor in the early stages in Korea comprised only light tanks, which had to combat Soviet mediums at a great disadvantage.

If our occupation forces in Japan had had medium and heavy tanks they would have ruined not only the bridges but the roads as well. The cost of renovation would have been prohibitive. Consequently, we fared badly in tank engagements until we could get our own mediums into action. Since then, however, they have defeated the Soviet mediums in every tank engagement to date.

The technical problems like those encountered with our new tanks can never be completely eliminated when development and production overlap. And there are other problems inherent in a speeded-up production program. I have already mentioned the shortage of experienced industrial workers in the tank plants. The manufacturer also has been beset with a shortage of casting facilities, critical materials and machine tools, to mention only some of the major difficulties.

There are relatively few foundries in the United States capable of turning out large turret and hull castings, and those foundries that are available require additional facilities. The Army has been making strenuous efforts to activate new sources for these castings and it now appears that we will be in a position in the near future to award contracts to other companies to supply the needed castings.



"[our mediums] have defeated Soviet mediums in every tank engagement . . ."



In general, the availability of production materials is improving considerably under the Controlled Materials Plan and due to expansion of basic material sources. However, there are a few critical materials, such as nickel, which remain in short supply and which must be carefully allocated by the National Production Authority. While it is not expected at this time that a shortage of these materials will delay production, the close margin on which our program is operating leaves no reserve to meet unforeseen problems which might arise.

Few of us fully appreciate the magnitude of our program to obtain the strategic raw materials needed for our tank production. In each M47 tank there is a striking and thought-provoking example of the size and complexity of that program. Each tank requires:

- 1,915 pounds of chromium of which 99 per cent of the ore is imported.
- 950 pounds of manganese of which 92 per cent is imported.
- 520 pounds of nickel of which 92 per cent is imported.
- 100 pounds of tin of which 78 per cent is imported.
- 6,512 pounds of bauxite (the ore of aluminum) of which 65 per cent is imported.
- 1,484 pounds of copper of which 29 per cent is imported.

And there are many other examples, which are equally as impressive.

The availability of machine tools will also continue to be a key factor in our efforts to meet production objectives. While the Army has made maximum use of governmental reserves and is diverting machine tools from lesser important programs, the only real solution to the machine tool problem lies in the delivery of new tools from the machine tool industry. It appears as though it will be at least another year before any appreciable supply can be expected from this quarter.

To give you some idea of the coordination required in producing a tank, let me quote you some figures on the number of separate contractors involved in furnishing different assemblies and supplies for the new light tank being produced by the Cadillac Corporation. The prime contractor has let contracts to 3,000 dif-



**"In the Army . . . there is a more important element [than equipment]—the man. To you, officers of all ranks, I look to uphold your heavy responsibilities of leading the finest person in the world—the American soldier."**

ferent subcontractors who, in turn, have let contracts to an additional 9,000 firms. The chain of manufacture and supply for this one tank alone reaches 24 states.

We hope our tank program is now on a firm production basis. There were difficulties, but we knew there would be, and we met them. We took some risks, but they were calculated ones, and they have paid off. We resisted the temptation of immediate production gains in order to establish a firm basis for a balanced long-range tank program, and I am still confident that it will pay off.

I think Korea has proven again that our concepts and doctrines are sound. Our experiences there have confirmed the need for organic armored units with our infantry divisions. Even though Korea is not considered good tank country, our commanders at all levels have lauded the accomplishments of our tank units and have emphasized the importance of armor in the ground combat team. I think the Army's current thinking on armor was reflected in last year's budget which allocated more funds to armor than to any other single Army item.

I have talked at such length about

hardware this morning that I fear that there may have arisen a misconception in the minds of some—that equipment is everything. In the Army, however, there is a more important element—the man.

We cannot expect too much of machines alone. The finest equipment in the world is literally worthless without technicians trained as soldiers—hardened, seasoned, and highly skilled in its maintenance and operation.

Once the soldier is trained to his weapon, he becomes a part of a highly developed combat team of infantry, artillery, armor, and air. These battle teams are the most difficult, the most complicated of all teams to create. They must be capable of operating on unfamiliar ground, in darkness as well as in daylight, amid incredible confusion, danger, hardship, and discouragement. The leadership of such teams is of the utmost importance; it requires judgment, intelligence, courage, integrity, and resourcefulness.

To you, officers of all ranks, I look to uphold your heavy responsibilities of leading the finest person in the world—the American soldier.



# *The Sixty-third Annual Meeting of The United States Armor Association*

"It is the first time, as far as I know, that the Chief of Staff has addressed us. It is the first time we have gathered 'in the field' and the first association of the occasion with the on-the-ground development of the arm."

Thus spoke Lt. General Willis D. Crittenger, President of the United States Armor Association, in opening the 63d Annual Meeting of the organization of mobile warfare, held this year at The Armored Center, Fort Knox, Kentucky, on January 14.

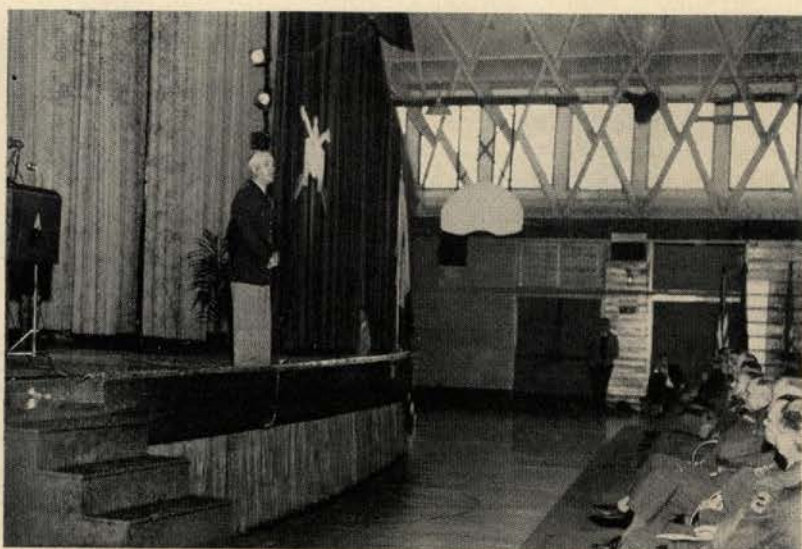
Four hundred and five active members of the Association were on hand in Theater Number 1 when the meeting was called to order. In addition, another 843 were represented by proxy, for a total voting strength of 1,237. This was the largest attendance in the entire history of the Association. The total representation was the more surprising in view of the fact that hundreds of the members around the world were in no position to respond to the call for the meeting.

A distinguished group of Armor representatives was present at the meeting, including Lt. Gen. Willis D. Crittenger, Commanding General of First Army; Lt. Gen. Edward H. Brooks, Commanding General of Second Army; Lt. Gen. Geoffrey Keyes, Weapons System Evaluation Group; Maj. Gen. I. D. White, Commanding General of The Armored Center and School; Maj. Gen. John H. Collier, Inspector of Armor in the Office of the Chief of Army Field Forces; Maj. Gen. D. W. McGowan, Commanding General of the 50th Armored Division, NG; Maj. Gen. Albert Sidney Johnson, Commanding General of the 49th Armored Division, NG; Maj. Gen. Bruce C. Clarke, Commanding General of the 1st Armored Division; Brig. Gen. R. E. S. Williamson, Commanding General of the 3d Armored Division and Brig. Gen. Arthur Walk, Assistant Division Commander; Brig. Gen. John C. Macdonald, Chief of Staff of The Armored Center, soon to command the Armored Combat Training Area,

Camp Irwin, California; Col. William J. Bradley, Chief of the Armor Career Management Section; Col. William P. Withers, President of the Armor Development Board; Major William G. Bell, Secretary of the Armor Association and Editor of ARMOR magazine; and commanders of many armor regiments and battalions, Regular, Reserve and National Guard, plus the many branch members, of all ranks and all types of Armor assignments, troop, staff and school.

Major General I. D. White, Commanding General of The Armored Center, host to the meeting, opened the day's program with a word of welcome, and the introduction of General Crittenger. The President requested that the members of the Executive Council join him on the stage, and the meeting was called to order.

During the year the Council and a special committee of Armor officers at Fort Knox made a study of the Constitution of the Association. The results of that study indicated that a



U.S. Army

Gen. Collins, escorted by Gen. White and Gen. Crittenger, entering Sadowski Field House, and delivering his address.



complete revision was necessary and might better be submitted to the membership for consideration and approval by means of a motion of adoption rather than through involved attempts at amendment.

The proposed revision of the Constitution was made the first order of business of the meeting in view of the liberalization built into the Membership Article. Discussion of the revision led to a vote on the motion to adopt, showing 1,237 in favor, including a unanimous action on the part of all present, as against 11 opposed to adoption, all proxies.

The reading of the minutes of the previous meeting of the Association was unanimously dispensed with, and the Secretary then read the Annual Report, covering the financial and general affairs of the Association. These appear elsewhere in this issue of ARMOR.

Some discussion arose with respect to the details behind the Association sponsorship of a mounted service museum and a history of Cavalry. Colonel F. J. Gillespie, who originated the point of discussion, moved that no funds or effort be expended for these projects unless all agencies that contributed to the development of the mounted service were consulted. The motion, which failed to be seconded, was put to a vote, without objection, to be rejected 1,219 to 18. Colonel Gillespie was referred to the details of the museum project appearing on page 18 of the March-April 1951 issue, which answered his questions.



U.S. Army  
The Chief of Staff with some of the senior Armor officers present. Left to right—Maj. Gen. Johnson, Brig. Gen. Williamson, Maj. Gen. McGowan, Lt. Gen. Crittenberger, Gen. Collins, Lt. Gen. Brooks, Lt. Gen. Keyes and Maj. Gen. White.

The next order of business was the election of officers. General Crittenberger turned the meeting over to Major General D. W. McGowan, Chairman of a Nominating Committee which included also Colonel William J. Bradley and Colonel Herbert H. Frost—one member representing the Regular establishment, one the National Guard and one the Reserve. A slate was submitted for consideration. Nominations were opened, and Colonel C. W. Abrams was entered from the floor, to be placed on the

slate in substitution for a Council member of the previous year. A motion to close the nominations was seconded and the slate was unanimously carried. The distinction and strength of the governing body augurs well for the coming year.

Colonel Gillespie then proposed that the Association entertain the possibility of sponsoring a movement to use the name "armor" in place of "armored" in relation to such designations as the armored division, the Armored Center, the Armored School,



At a press conference on his arrival at Fort Knox, Gen. Collins answers some questions concerning the armor picture.





U.S. Army

General Collins riding the lead M46 of a section manned by Weapons Department crews demonstrating the Armored School Tank Crew Proficiency Course.

etc. Colonel Thomas D. Roberts moved that the Executive Council study the proposal to sponsor the redesignation. The motion was seconded and passed.

Discussion of a combined magazine as against a branch magazine, posed by Colonel Louis Hammack, resulted in an overwhelming response in favor of maintaining an independent publication.

The appreciation of the large meeting available to the greatest number of members was expressed by several members and the President extended the thanks of the Association to General White, The Armored Center, School and Board. The business session of the 63d Annual Meeting of the Armor Association was then adjourned.

Army Field Forces Board Number

2 took over the program following the adjournment of the business meeting. Colonel William P. Withers, President of the Board, discussed the latest developments in the combat vehicles line, highly interesting technical background for all tankers.

The Armored School then entered the program with a presentation on the subject of "Trends in Armor," given by Lt. Colonel Edwards of the Command and Staff Department. The material, which represents School thought along general lines appears in article form elsewhere in this issue.

Attention now switched from Theater Number 1 to Sadowski Field House. Upwards of 2,000 officers converged upon this point to fill the building to capacity for the feature event of the Association's 63d Annual Meeting—the address of the Chief of Staff of the United States Army.

General Collins was received with full honors upon his arrival at the Field House, where smartly turned out troops, band and artillery were formed for the firing of the salute and inspection. The Chief of Staff, accompanied by The Armored Center commander then entered the Field House to pass an impressive 3d Armored Division Honor Guard and move down the center aisle to the front of the house as the assemblage stood at attention.

In introducing General Collins General Crittenger took note of "his well known interest in Armor, his broad experience with it on the battlefield, and the highly important post he holds in the defense of our country and the free world" and of the fact that "his presence here, in his very busy schedule, is an indication of the recognition he accords Armor's place in modern combat." Concluding his introduction of the Chief of Staff, General Crittenger asserted that "the United States Armor Association, in its Annual Meeting is entirely conscious of the honor he does us, and of the vital import of his views on a subject that is of such compelling interest to all of us."

The significance of General Collins' remarks is evident in the wide coverage accorded them in the press. His address appears as the lead article



U.S. Army

Discussing the Armor story at the Association meeting at Fort Knox. L to R—Gen. McGowan, Gen. Clarke, Gen. Crittenger, Gen. White and Gen. Collier.



in this issue of ARMOR, where it may be studied by all members of the using arm as the official story in our field of primary interest, thus receiving the full attention that it deserves. Touching upon such key matters as the family of tanks concept, the need for the armored division, the role of the tank in the future, and the importance of Armor's role in the ground picture, his remarks are an inspiration to the Armor Branch.

The afternoon portion of the program moved to the field where the Weapons Department opened the session with a demonstration of the Tank Crew Proficiency Course. The initial crew through the course was composed entirely of lieutenants attending the Officers Course at the Armored School. Using live ammunition, they ran the course to take under fire all possible types of target, including air and ground. Visitors, including General Collins, rode standing in the bed of a 2½ ton truck immediately behind the tank to observe the course. A second round was made with a Weapons Department crew manning the Patton.

From here the action moved to a point several miles away for a demonstration by Board Number 2 of all types of vehicles. Light, medium and heavy tanks, personnel carriers and trucks were demonstrated, including the firing on targets at appropriate ranges. Various new engineer devices were displayed and described and visitors were able to look over the many vehicles. Much of the Board presentation was in the classified area.

A closed conference attended by General Collins and senior Armor officers took place in late afternoon, at which some of the more highly classified material was covered.

In the evening the official dinner topped off a day whose success was assured by the hospitality and arrangements of Major General I. D. White and The Armored Center, and the many agencies and individuals who contributed to the program.

The 63d Annual Meeting of the United States Armor Association was an epochal event and an outstanding success. The members of the organization of mobile warfare look forward to carrying on the precedent next year and in years to follow.

ARMOR—January-February, 1952

## MEMBERSHIP IN THE ASSOCIATION

(See Page 18)

Membership in the United States Armor Association is of four classes:

**Active**

**Junior**

**Associate**

**Honorary**

**ACTIVE:** The key phrase concerning your eligibility, as stated in the constitution is . . . *"assigned to, detailed in or serving with."* Officers of any branch and all components whose status meets one of the above provisions, are eligible for active membership. This includes assignments to troop units, The Armored School, The Armored Center, The Armor Board, a staff assignment. It includes all retired personnel whose commissioned career was in the mobile arm.

**ASSOCIATE:** All present and former commissioned officers, warrant officers and noncommissioned officers of the Armed Services are eligible for this class of membership. Although not entitled to vote or hold office, associate members are entitled to attend meetings, take part in discussions, and receive book department benefits and other membership privileges.

**JUNIOR:** This is a special class of membership at a special military student rate to assist in furthering professional careers. The students in such schools as West Point, VMI, Valley Forge, Culver, The Citadel, Texas A & M, and so on, are open for this membership. The junior member may also attend meetings and take part in discussions.

**HONORARY:** The Executive Council selects persons distinguished in military, naval or air service, or in learning, to honorary membership.

Every Armor officer should be an active member of his branch Association. Regardless of whether 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 its aims and purposes, while receiving the benefits of professional association in return, as well as a personal copy of the magazine.

## Anyone may subscribe to *ARMOR*



# THE NEW COUNCIL

*The Association's governing body for 1952 represents the field of armor. All components of the Army are included. The honorary officials have served distinguished careers. A president intimately identified with armor tops a list that includes the commanders of two armored divisions, a combat command and two regiments; the present and a former Armored Center and School commander; the Inspector of Armor; the commander of the Armored Combat Training Area; the Chief of the Armor Career Management Section; a distinguished legislator who maintains an active interest in armor; and others in key staff assignments, whose records in armor speak for themselves.—ED.*

## Honorary President

MAJ. GEN. GUY V. HENRY, RET.

## President

LT. GEN. WILLIS D. CRITTENBERGER

## Honorary Vice-Presidents

GENERAL JACOB L. DEVERS, RET.

LT. GEN. ALVEN C. GILLEM, RET.

LT. GEN. GEOFFREY KEYES

LT. GEN. EDWARD H. BROOKS

MAJ. GEN. ERNEST N. HARMON, RET.

## Vice-Presidents

MAJ. GEN. HOBART R. GAY

MAJ. GEN. ALBERT SIDNEY JOHNSON, NG

COL. HERBERT H. FROST, USAR

## Secretary-Treasurer

MAJ. WILLIAM GARDNER BELL

## Additional Council Members

MAJ. GEN. I. D. WHITE

MAJ. GEN. JOHN H. COLLIER

MAJ. GEN. BRUCE C. CLARKE

BRIG. GEN. JOHN C. MACDONALD

BRIG. GEN. HARRY SEMMES, USAR

BRIG. GEN. PAUL M. ROBINETT, RET.

COL. CREIGHTON W. ABRAMS

COL. WILLIAM J. BRADLEY

COL. HENRY T. CHERRY

COL. JAMES O. CURTIS

COL. WELBORN G. DOLVIN

COL. PAUL D. HARKINS

COL. BRIARD P. JOHNSON

COL. HENRY CABOT LODGE, JR., USAR

COL. JAMES H. POLK

# ANNUAL REPORT

*To the Members of the United States Armor Association:*

Submitted herewith, as required by the Constitution, is the report of the Secretary-Treasurer-Editor for the year 1951, covering the general affairs of the Association and its publication:

## GENERAL

### *The Association*

The passage of the Army Organization Act and the outbreak of war in Korea came in the same month of 1950. Both were of great significance to the mobile branch of the ground forces, and both guaranteed the importance of the year 1951 to the United States Armor Association and to mobile warfare.

The Association was ideally suited as a result of its constitutional aims and its professional standing, to promote certain adjustments arising from the change of branch name. The consequent change in Association and Journal names made necessary a general dissemination of information, a maintenance of continuity, a perpetuation of history and tradition, the elimination of certain differences, the fusing of elements and the selling of innovation. The Association's publication was the primary carrying instrument.

The opening of 1951 brought the new branch insignia. Full coverage was given through the magazine of the Association, and advance insignia were procured and one set presented by the President of the Association, on behalf of the membership, to the Commanding Officer of every tank battalion in the Army, including those in Korea.

As a further contribution to the solidarity of the arm, a cable went forward from the President to the Commanding Officer of each tank battalion in Korea, expressing on behalf of the entire membership of the Association a message of confidence and pride in the excellent performance of duty of those battalions, and their contributions to the high standards of U. S. Armor.

With an eye to the professional grounding of the specialists in mobility, and in order to perpetuate the highly valuable history and traditions of the mobile arm, the governing body has considered several proposals as appropriate Association projects, among them the establishment of a mounted service museum, and the publication of a history of cavalry. These are in preliminary stages only, and will be presented to the membership in due course when some sort of working base should be set down.

During the year a special committee of Armor officers made a detailed study of the Constitution of the Association. Although fundamentally sound, the 66-year-old document required a revision beyond its periodic amendment to make it a thoroughly workable instrument in terms of today. A proposed revision was presented to the membership with the call for the annual meeting, to be a subject for vote at the meeting.

In the belief that a substantial library at Association Headquarters is a professional necessity, and can be of great service editorially and to the entire membership, the Secretary put under way during 1951 a campaign to enlarge the very small existing library, in which many gaps exist along the lines of material on mobility. As an adjunct to this, the editorial reference file of standard reference



works was built up during the year. The library expansion will continue in the coming year. Thanks are due the several individuals who responded with a contribution of books.

A badly needed dressing up of Association Headquarters in Washington, begun in 1950, was completed in 1951. In the equipment line, the 19-year-old graphotype machine, used for cutting all addresses, was replaced by a new machine at year's end. All in all, the Association's physical establishment is in excellent shape for future operations.

### The Magazine

The Associations of the ground combat arms by their very nature consist primarily of their magazines. This is particularly so of those such as our own, with an active duty staff and no paid advertising. Lacking procurement responsibilities, and with no tie to the industrial area, the using arms center their attention upon their primary function. The magazine is the tie for a membership scattered around the world.

Nine issues of ARMOR have come from the press. With the first of these the editor attempted to set a high standard and establish for the magazine a recognition and reputation, first in its special field and mission, after that in every related area. That has been the theme behind the last nine issues, and it is intended that it be projected into the future.

In an attempt to further that aim, several issues of ARMOR were entered in the Magazine Show of 1951, sponsored by the American Institute of Graphic Arts. The first issue of 1951 placed, being selected by a distinguished panel of judges as superior on two counts.

Proceeding from presentation to content, each issue has been carefully drawn with respect to balance. Effort has been made to maintain perspective, so that the war in Korea, for example, is covered, but not to the exclusion of the long-range bases of our subject—training, doctrine, research, equipment, organization, tactics, history, tradition and the many things that go to make up the whole.

Editorial policy, it may be noted, has been insistent with respect to the armored division and the medium tank. Teamwork has been emphasized above all else. Armor's interests have been voiced. Accomplishments affecting Armor have been appreciated. Mobility has been the theme, and it has been related to various parts of the world and to other countries and armies. Comment from all grades, top to bottom, has been offered, and authorship has been select and diverse.

The subscription trend has been steadily upward. The support of commanders in the field has been most gratifying. Promotion has been active, and a total of 2,341 new subscribers in 1951 has resulted in a net gain of 1,524 as against 780 for 1950, and has brought the *paid* circulation of the magazine over the 5,000 mark for the first time since 1945, with the number of copies *ordered* on the last issue of 1951 equalling that of the issue of mid-1944, at the height of World War II.

Comment within and outside of the military indicates that ARMOR stands up well with any magazine in the field. To maintain that standing, and in fact advance it, will require the maintenance of present rates for membership-subscription, and the continuation of such ex-

## FINANCIAL REPORT

### UNITED STATES ARMOR ASSOCIATION

1951

CASH RECEIPTS & EXPENDITURES		
Department	Receipts	Expenditures
ARMOR Magazine .....	\$21,506.19	\$15,672.41
Book Department .....	2,773.01	1,893.40
Rent & Sub-Lease .....	425.00	1,850.47
11th Armored Division Association .....	1,542.99	143.92
Income from Securities .....	151.00	
Office Furniture & Equipment .....	100.00	910.95
Maintenance (Office Machinery) .....		130.20
Council Meeting Expense .....		73.75
Miscellaneous .....	54.54	686.54
Insurance .....	1.76	38.02
Salaries .....		2,041.60
Taxes:		
Social Security .....		72.00
Withholding .....		316.80
D. C. Sales .....		1.40
D. C. Personal Property .....		23.29
Stationery & Postage .....		1,511.85
Office & Shipping Supplies .....		728.87
Telephone & Telegraph .....		540.55
Janitor Service .....		99.00
	<u>\$26,554.49</u>	<u>\$26,735.02</u>
Bank Balance (1 January 1951) .....	489.72	
Bank Balance (31 December 1951) .....		<u>309.19</u>
<b>TOTAL RECEIPTS &amp; EXPENDITURES .....</b>	<b><u>\$27,044.21</u></b>	<b><u>\$27,044.21</u></b>
Total Assets .....		\$ 9,565.15
Total Liabilities .....		950.08
<b>NET VALUE of the Association (31 December 1951)</b>		<b>\$8,615.07</b>

penses as color throughout the magazine, art work, varnished covers, high grade stock and liberal illustration.

### The Book Department

The sale of books through the Book Department represents the only source of income for the Association other than the principal one of membership-subscription. Book publishers grant varying discounts for their publications ranging from 10 to 40%. The average is probably somewhere in the neighborhood of 25%.

The Book Department is able to supply any book in the English language, if available. But book business is very light as a whole. The additional means available to the Association for correcting this involve the most important elements of operation—time, money and personnel. Very close to the maximum use of these three ingredients obtains at the present time.

A discount, prepublication price advantages and postage payments are offered members as an inducement to use the book service. Thus they help themselves while helping the organization. The degree of value of the book business to the Association should be evident to all.

### SUMMARY

In the light of its mission, the Association is carrying out its responsibilities. Its financial condition is sound and improving. Accomplishments resulting from expenditures in the last 18 months are such that 1952 should find a gradual strengthening of the financial base with no sacrifice of the carrying out of all responsibilities.

The Armor Association is a recognized professional organization in a highly important field. The end of 1951 discloses a remolded and welded organization of sound reputation, with great potential to fill a definite need. There should be no limit to the year ahead.



# CONSTITUTION & BY-LAWS OF THE UNITED STATES ARMOR ASSOCIATION

## CONSTITUTION

### ARTICLE I. Name.

The name of this Association is THE UNITED STATES ARMOR ASSOCIATION.

### ARTICLE II. Headquarters.

The headquarters of this Association is Washington, D. C., or such other place as the Executive Council shall determine.

### ARTICLE III. Object.

1. The aims and purposes of this Association are to disseminate knowledge of the military art and sciences, with special attention to mobility in ground warfare; to promote the professional improvement of its members; and to preserve and foster the spirit, the traditions and the solidarity of Armor in the Army of the United States.

2. There shall be no capital stock, and no distribution of profits to any officer, member or other person, but the entire income of the Association from all sources shall be applied and used in the conduct of its activities and in furtherance of its object as set forth in Article III, subparagraph 1.

### ARTICLE IV. Membership and Qualifications for Membership.

1. Members of the United States Armor Association are classified as follows:

- a. Active Members.
- b. Associate Members.
- c. Honorary Members.
- d. Junior Members.

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 noncommissioned officers of honorable record in the military, naval or air service, shall be eligible. Such members shall not have the right either to vote or hold office; otherwise they shall have the privileges of members.

c. Honorary members: Persons distinguished in military, naval or air service or learning shall be eligible upon election by a majority vote of the Executive Council. Such members shall not be subject to the obligations of active or associate members nor entitled to the right either

to vote or to hold office. Otherwise they shall have the privileges of members, including the privilege to attend meetings and to engage in discussions.

d. Junior members: Students of the Service Academies, Military Schools and ROTC institutions shall be eligible. Annual dues shall be at a reduced rate as determined by the Executive Council. Such members not to be entitled to vote or hold office; otherwise they shall have the privileges of members.

3. The ruling of the Executive Council on all applications for membership shall be final.

4. Membership in this Association may be terminated for cause at any regular or special meeting of the Association upon concurrence of three-fourths of the members attending said meeting; but only after the member concerned has been advised by written notice of said proposed action at least twenty days prior to such meeting, which written notice shall have been mailed to his address of record retained in the office of the Association, and only after said member has been given an opportunity to be heard at said meeting. Said member will be given an opportunity to be heard at said meeting if the member indicates his desire to the Secretary-Treasurer prior to said meeting.

5. Active members only shall be entitled to hold office and to vote. Each active member shall have one vote which may be cast either in person or by duly executed proxy.

### ARTICLE V. Officers and Their Election.

1. The officers of the Association shall be as follows: President, First, Second and Third Vice-President, Secretary-Treasurer, Editor and fifteen (15) elected members of the Executive Council.

2. The President, the three Vice-Presidents, and the fifteen (15) 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 fifteen (15) 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.

4. The terms of all officers shall begin immediately after their election or appointment and shall continue for one year or until their successors have been duly elected or appointed.

5. The Executive Council shall manage the business and property of the Association consistent with law and this constitution; shall have power to make and amend the by-laws for its own government, which by-laws shall not be inconsistent with law or this constitution; and shall have the power to provide in the by-laws for the appointment of such other officers, agents and/or employees as it



shall deem necessary and proper, and to prescribe their duties and compensation.

6. If a vacancy occurs in the office of the President, the unexpired term shall be filled by the First, Second or Third Vice-President, in order. If a vacancy occurs in any other elective office, it shall be filled by election at the next business meeting of the Association. The President may, however, make an interim appointment pending said election of a successor.

#### ARTICLE VI. Meetings.

1. The annual or regular meeting of the Association shall be held in January of each year.

2. Special meetings may, and upon the written request of twenty (20) members, shall be called by the President at other times.

3. One month's notice of regular and special meetings shall be given. Such notice shall be deemed to have been given when published in an issue of ARMOR at least one month before such meeting, and a copy thereof mailed to each member at his address of record retained in the office of the Association.

4. Five per cent (5%) of the active membership of the Association, present in person or by proxy, shall constitute a quorum for the transaction of business, provided that at least ten (10) active members are present in person.

#### ARTICLE VII. Amendments.

1. This constitution may be amended or repealed by a vote of two thirds of the active members of the Association present in person or by proxy at a duly called meeting of the Association, provided that the notice of such meeting shall contain a notice of intent to amend or repeal as well as a copy of the proposed amendment or repeal. Recommendations for amendment or repeal shall be presented to the Secretary-Treasurer in writing signed by not less than ten (10) active members of the Association at least two months before the date of the meeting at which the proposed amendment or repeal is to be considered.

### BY - L A W S

#### ARTICLE I. Object.

1. In furtherance of its aims and purposes, this Association shall publish with such frequency as may be determined from time to time by the Executive Council, a professional and scientific journal to be known as ARMOR, and shall conduct a book department for the sale of books, maps and periodicals to its members and to the general public.

2. The object of this Association may be further promoted by such other lawful means as the Association or its Executive Council from time to time shall deem appropriate.

#### ARTICLE II. Membership.

1. For the determination of eligibility for active membership in this Association, the designation "officers and warrant officers assigned to, detailed in, or serving with Armor" shall include the Regular Army, the National Guard and the Organized Reserve Corps.

2. Any person desiring to become an active or associate

member shall make application to the Secretary, which application shall set forth facts establishing his eligibility and be accompanied by the payment of at least one year's dues, the amount of which shall be determined from time to time by the Executive Council. The applicant's eligibility appearing, the Secretary may grant the membership.

3. All active and associate members shall receive the Journal, ARMOR, without cost other than the annual dues. All honorary members shall receive the Journal, ARMOR, without charge. Junior members shall receive the Journal, ARMOR, at the special membership fee.

4. Any member may withdraw from the Association at the end of any current year by tendering his resignation; and membership shall lapse *ipso facto* upon failure to pay the annual dues; but such withdrawal or lapse shall not operate to relieve any such member from liabilities said member may have incurred prior thereto as a member of the Association.

5. Any person or organization may become a subscriber to the Journal, ARMOR, upon the payment of a subscription price equivalent to the annual dues of the Association, and all such persons who are not regularly admitted and entered as active, associate, junior or honorary members shall be considered merely as subscribers.

#### ARTICLE III. Officers.

1. The office of Secretary-Treasurer and Editor may be held by one and the same person.

2. The duties of the officers shall be such as usually pertain to their respective offices. The officers may receive such compensation for services performed as these by-laws may prescribe.

#### ARTICLE IV. Executive Council.

1. The President shall *ipso facto* be the chairman of the Executive Council, and in his absence the First, Second or Third Vice-President, in order.

2. In the event all four of the above officers are absent, the senior council member present shall act as chairman of an Executive Council meeting.

3. Two-thirds of the members of the Executive Council shall constitute a quorum for the transaction of business.

4. A majority vote will govern in all matters acted upon by the Council.

5. The chairman of the Executive Council will provide any or all of the following subcommittees when the Council deems them necessary to carry out the provisions of the Constitution and By-laws:

- a. Nominating committee.
- b. Auditing committee.
- c. Editorial policy committee.
- d. By-laws committee.

6. It is desirable that a number of the members of the Executive Council be residents of the vicinity of the headquarters of the Association.

#### ARTICLE V. Amendment.

These By-laws may be amended or repealed by a majority vote of the members of the Executive Council.



# The Adjustment to Atomic War

by MAJOR LAMAR McFADDEN PROSSER

**W**ITH monotonous regularity, civilian publications have been brandishing the threat of atomic warfare and predicting a revolution in the technique of battle which will follow the development of "fantastic new weapons." Opinions have been expressed by Movie Stars, Senators, Five Star Generals, and the man-in-the-street, and all have been respectfully published, each new headline adding to the general confusion.

It is held by some civilian analysts that military men are slow to appreciate the potentialities of the new developments and even (so help me) underestimate the power of atomic weapons. This feeling is probably the result of the fact that no responsible military man has published a careful analysis of the actual effect of mass-destruction weapons on traditional ground operations. Our professional journals have been rightly reserved and, while little of the wild, hysterical speculation has been circulated in them, neither has there been sufficient sober appraisal of the real changes which have been wrought.

If we take the accepted principles of war and study each in the light of the increased destructive power of our new weapons, we should be able to cast the shadow of the future before us. Most nonprofessional writers state flatly that the principal of mass and concentration of effort is no longer practical. And certainly, the great destructive power of the fantastic new weapons will result in greater dispersion both in offense and on defense. But in ruling out the principal mass,

these writers seem to have neglected one fundamental truth.

THERE CAN BE NO MILITARY DECISION UNLESS A SUPERIORITY OF FORCE CAN BE PRODUCED AT SOME POINT ALONG THE LINE OF CONTACT. If the weapons of the attacker and the defender are equally powerful—and we must assume they will be—then local superiority is only attainable by concentration. This statement in no way rules out the possibility of maneuver and it does not restrict us to purely frontal attacks. For what does a commander gain by maneuver? He seeks to create a situation in which the tactical advantage of position, in effect, strengthens his local superiority of force.

## Concentration Still Applies

Thus, a larger military unit is often defeated by a smaller when the smaller can produce at some point on the field a local superiority of force. Attacks may be delivered from more than one direction in order to reduce the number of troops concentrated in one locality, yet it is inescapable that local superiority of force can only be achieved by superiority of weapons and more effective maneuver or concentration (or combinations of these, of course). It would be unwise to base our planning on any assumption except equality of weapons and capability for maneuver. We are left, whether we like it or not, with the conclusion that the theory of CONCENTRATION still applies, atoms or no atoms.

Commanders, then, must have forces which can be widely dispersed but at the same time have the capability of rapid local concentration. No matter how indirect our objectives,

there comes a time when the force must assemble its power to overcome that of the enemy. It is inconceivable that a force carefully dispersed on the defensive can be successfully attacked by forces equally dispersed—if their weapons are equally powerful. This capability of rapid concentration will be necessary in order to destroy the enemy or to secure a penetration—possibly as a follow-up to atomic weapons used against the enemy—or to block and eject an enemy penetration or infiltration of our own position.

While thus concentrated the troops offer the most profitable target for mass destruction weapons. Therefore, the concentration must be accomplished quickly, with a decisive blow delivered as rapidly as possible, followed by immediate dispersion in order to reduce the time of vulnerability. SPEED OF MANEUVER will become the vital element in ground action. In traditional warfare, the great danger has always been the defeat of forces in detail while they were too widely separated to be mutually supporting.

The danger now lies in the opposite; the greater danger being too great a concentration for too long a TIME. Forces must concentrate only at the critical moment of the action and disperse rapidly thereafter. At this critical moment, and only then, should the force offer a profitable target for atomic weapons. The swiftness of the concentration must introduce the element of SURPRISE and so reduce the danger of atomic annihilation. In all the foregoing our artillery and tactical air support by counter-battery, radar-interference, and close support bombing, will attempt to isolate the point of conflict. This support will be launched at the

Major Lamar McFadden Prosser is the Unit Instructor of the 149th Medium Tank Battalion, Salinas, California.



very moment of concentration to increase surprise and to screen the concentration, thus increasing SECURITY. Time and the CLOSE COOPERATION and COORDINATION of all forces are essential.

Wide dispersion of the ground forces and the requirement of maximum coordination and cooperation brings up the question of communication and CONTROL. A commander whose forces are widely separated and whose only chance of success lies in rapid maneuver of his units must have adequate means of contact and vehicles of dependable trafficability. The need for MOBILITY is obvious and trafficability implied here is the complete cross-country ability of the entire force.

If the preceding observations are sound, it can be seen that all the old, fundamental principles of war are still applicable. CONCENTRATION of effort, DISPERSION in defense, SPEED of maneuver, SURPRISE, the element of TIME, COOPERATION and COORDINATION, CONTROL, MOBILITY and SECURITY are still essentials. Far from sweeping away these truths of war, the scientific discoveries of the present era simply indicate a shift of emphasis. The Principles of War remain constant. The application of these principles changes to fit each new situation. And, though the weapons are just as fantastic as advertised, war will continue to be fought along fairly familiar lines. The development of artillery and the tactical use of aircraft did not make concentration impossible, though they increased the need for dispersion. Our new, more powerful weapons carry this trend further, but tactical concentration will continue to be used because, between forces of equal or near equal strength, no decision is possible without it.

As the new weapons become more controllable, both in the sense of accuracy and in destructive power, this trend will be accelerated.

We should concern ourselves now with the problems of reorganizing our forces in order to meet the new emphasis. All now seems to hinge on mobility. The speed of maneuver now demanded may require that all ground forces be mounted. The assembling of regiments of foot soldiers is much too time-consuming and

would certainly reduce the possibility of surprise and increase the time of vulnerability. To mount the infantry in trucks (so-called motorized divisions) is to remain road-bound, and this would be fatal. The answer seems to be tracked vehicles. Whether or not these vehicles should also be armored, introduces problems too numerous to be settled without experimentation. But that all troops will be mounted in tracked vehicles appears to be inevitable.

In order to achieve the measure of control now required, all ground forces will have to have superior communications similar to those now employed by Armor.

### Heavier Tank Proportion

Since individual fighting elements (vehicular crews) will be widely dispersed, long range weapons capable of neutralizing the intervening space seem to be indicated. This may call for more machine guns per hundred yards of front than we have hitherto felt necessary since the fire of individual riflemen, widely dispersed, would not be dense enough to stop a determined enemy. It also calls for the heavier fire power of tank weapons and a heavier proportion of tank to infantry units.

Huge supply depots, long lines of communications and the "fatal disproportion of supply to combat vehicles" must be eliminated. The suc-

cess of the Berlin airlift indicates that air supply might be a possible solution though, admittedly, the scale of such an operation would be almost as fantastic as the weapons themselves.

The mere announcement of the development of these new weapons creates an extremely novel situation. In the use of other shocking developments in weapons and warfare such as gas, the tank, the V-Bomb and the Atomic Bomb (the nature of the latter was not known) the maximum use was made of the surprise and the shock of their sudden commitment in the field. Now, as a deterrent to the Communists, we have other new weapons, and in doing so, we have partially neutralized their shock-power. Since the fact that they exist is known, it would perhaps be wise to publish sufficient details of their nature to permit commanders of troops in training to allow for them in tactical problems. Neither gas nor tanks nor the V-Bombs achieved their maximum effect, when first committed, because the commanders of the using troops understood too little of the weapons put into their hands. Little more than this can be derived from the facts now known.

From what is already known, however, it is possible to say definitely that Armor will have an increasingly important function as ground forces adjust themselves to atomic war.

### Mice Partially Disable an Armored Division

Legend has it that mice once destroyed a German archbishop; official records reveal that mice almost destroyed a German armored division. A teletype sent on 4 December 1942 by the German Army High Command to Army Groups A, Don, B, Center, North, and D reads:

An armored division in the East recently was ordered to park its tanks in heated shelters. Without anyone noticing it, a large number of mice made their nests in these shelters. In the course of time the mice gnawed on the electric wiring of the tanks and thereby caused a great number of them to be temporarily nonoperational. This was not discovered until the division was suddenly alerted for action, with the result that 30% of the tanks had to be left behind for repairs.

Care will be exercised that such an occurrence does not happen again and especially that tanks and other motor vehicles are constantly checked to determine if they are operational. Subordinate units will be instructed accordingly.

The official copy of the teletype has two pencil comments in the margin: 1. "Charges will be preferred against the responsible commanders" and 2. "Soviet mice!"—Lt. COL. M. C. HELFERS.



# SOVIET ARMOR TACTICS

*Although Russia was our ally in World War II, her military affairs were characterized by a certain amount of obscurity. The readily accessible information on Soviet armed forces was little more than a controlled dissemination of carefully selected generalities. As a result, it would not be farfetched to say that enemy Germany knew more about the Russian army than did ally America—for Germany learned the hard and elemental way—on the field of battle. Be that as it may, the postwar period brought with it the lowering of an Iron Curtain which blotted out the Russian military scene to the point where information is difficult to come by. Military history remains one of our more valuable sources of information on the armies of the world. It has been a subject of increasing importance in recent times. For example, no war in history has been so well recorded as World War II. The analysis continues, covering both sides. The United States Army's Historical Division, in its mission of recording a complete, definitive and objective history of the war, has made use of the services of former enemy personnel to add perspective. Qualified former German military men have been engaged in making studies of various actions and campaigns. Of great interest are those projects concerning small unit tactics and the tactics of individual arms. Armor—Russian Armor—has been the subject of one of the studies. ARMOR, through special arrangement with the Office of the Chief of Military History, offers here by those who know the subject best the first of a series of small unit actions detailing Russian armor tactics.—THE EDITOR.*

## RUSSIAN TANKS VS ATTACKING GERMAN TANKS

Several weeks after the German invasion of Russia in 1941, the 3d Armored Division reached the Dneiper River north of the town of Slobin and prepared to attack across the river.

On the 6th of July, the commander of the armored regiment in reserve was assigned the following mission (in extract):

Infantry Division X, attacking toward Slobin from the southwest, has contacted strong hostile forces, and its northern wing is bogged down about four kilometers southwest of the town. The armored regiment will immediately launch an attack in the direction of Slobin, destroy the hostile forces believed to be there and thus relieve the infantry fighting southwest of the town.

An armored regiment was composed of two armored battalions, each consisting of about 40 tanks ready for action.

The terrain in the direction of Slobin was generally open, gently rolling farmland. The day was dry and sunny.

The armored regiment set out for Slobin immediately, with the First Battalion leading and the Second Battalion echeloned to the right rear in the movement, in order to meet the Russian troops estimated to be south of the town, thereby relieving the pressure on the German infantry.

The First Battalion ran into weak infantry resistance and an artillery battery some three to four kilometers in front of the town, and was moving over this and preparing to push into the city when it received destructive tank fire from Russian tanks cleverly concealed among the outlying houses, farmyard entrances and barns. These tanks had held their fire until the last possible moment. At the same time, the crew of the artillery battery, which had been by-passed and left unguarded, took advantage of the situation to spring to their guns, turn them around and shell the tank battalion from the rear.

As a result of this surprise attack, 22 German tanks were put out of action, and were, for the most part, total losses.

In the meantime, the Second Battalion, in feeling to the right, had

moved up the opposite side of the railroad from its sister battalion. Upon hearing the distress signal by radio, it was unable to advance locally due to the high embankment on which the railroad was laid at this point. It therefore continued its course south of the railway and moved into the city. The first armored company to penetrate the northwestern section of the city was able to destroy 25 Russian tanks out of about 30, suffering no loss to itself. The Russian force had not expected an advance from this direction and attention had been occupied with the battle going on with the First Battalion to its front.

### Lessons

The Russian method here was one that can be most successful in cases where tanks with inferior weapons are manned by disciplined and well trained crews. Gunnery and trickery were qualities particularly natural to them. The surprise saves forces and can lead to success where the enemy acts incautiously.

The German unit was careless as a result of previous success. Insufficient reconnaissance preceded the attack. An armored unit should be accompanied by armored infantry on independent missions. In this instance

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**Oskar Munzel**, author of these first four actions in this series, was a Generalmajor in the German Army during World War II, and fought during World War I on the Russian front as a platoon leader from 1917 until late 1919. Remaining in Germany's postwar army of 100,000 men, he went on to specialized training at Dresden in 1926 and at the Berlin War College in 1931-33. Promoted Oberstleutnant in 1940, he was assigned to the Russian front in 1941 as commander of a panzer battalion. On the first of January in 1942 he was promoted Oberst and given command of a panzer regiment there. In the following year he was placed in charge of the training courses at the Panzer Forces School at Wuensdorf, and during the same year was appointed Chief of Panzer Troops School I at Bergen-Fallingb. He was promoted to Generalmajor in late 1944 and went on to assignments in the field forces which included acting panzer divisional commander and commander of a panzer brigade on the Eastern front, and commander of a panzer training force and a senior commander on the staff of OB West on the Western front.

they would have taken care of the by-passed artillery battery and its personnel. A battery of self-propelled artillery would have been an asset to the attacking battalion. Smoke screening is often the sole means of protection in a situation such as the German force encountered here.

The Russian force made a mistake in failing to secure its flank. As a result, the Second Battalion, contrary to its original intention of leaving the city to the infantry further south, was able to penetrate the objective and achieve great success while bringing relief, however delayed, to the First Battalion.

Had the Second Battalion followed the First, its presence would have eliminated the Russian artillery battery from the picture, and needed assistance would have arrived sooner. Thus, in obscure situations it is better to advance in depth in order to meet any possible surprises with unfettered forces, rather than to advance on too wide a front where contact can easily be lost and both sections of a force simultaneously pinned down.

Whatever the situation, close-in security should never be neglected. It must remain within range of the protective fire of rear elements.

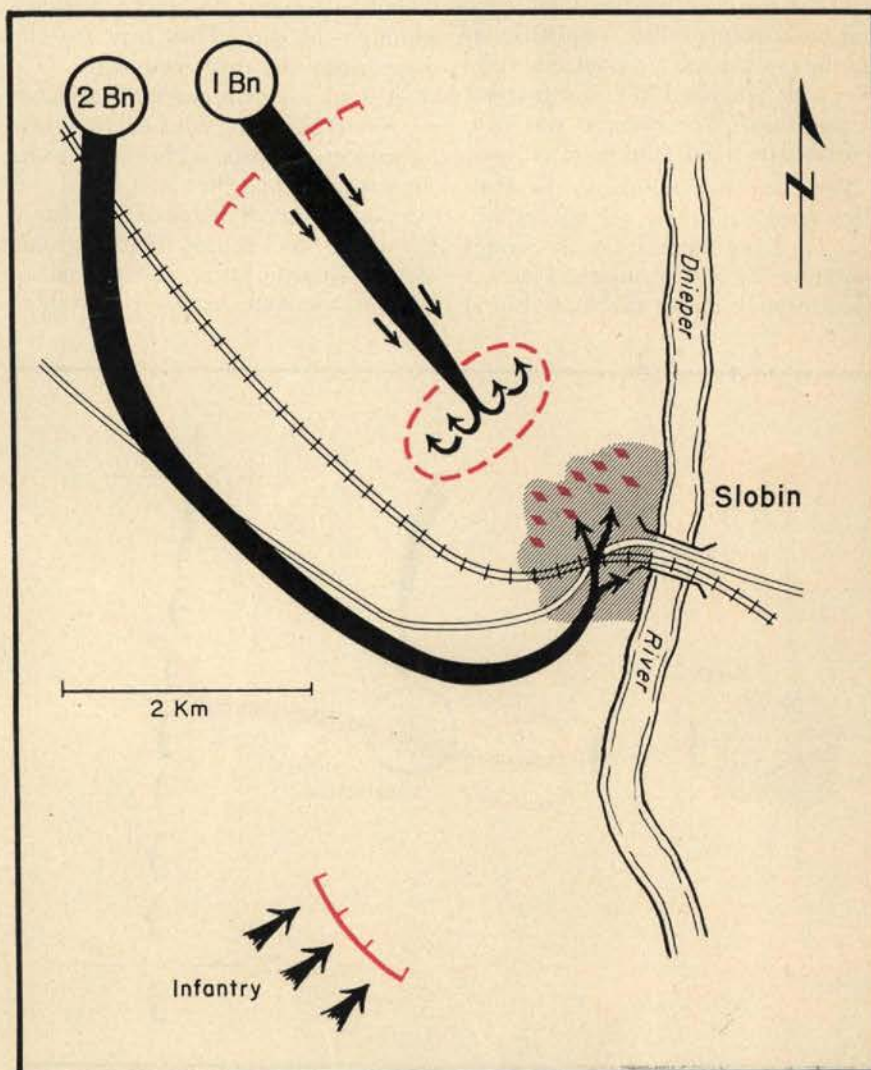
The following remarks, prefatory in nature, are those of the topic leader, **Hermann Burkhart Mueller-Hillebrand**, former Generalmajor in the German Army, whose writings have appeared in **ARMOR** on several occasions.—THE EDITOR.

If the reader attempts to extract essential characteristics of the Russian conduct of war from these examples, he will conclude that the conduct of war and of the Armored Command was extremely diverse and that actually nothing "typical" can be determined. In one place, unwieldiness appears, in another a high degree of flexibility. Here is a clear-cut design of command, there an astonishing waste of strength.

In order to reach a conclusion, one must be cognizant of the development of the Russian Armored Command during the war. It assumed a privileged position in the Russian Army at that time, received excellent officer and enlisted personnel replacements and its tanks were well constructed.

In 1941, the Armored Command was in the midst of reorganization and of conversion of armament. In place of outmoded and light tank types came medium types, especially the T-34. Until then, the Armored Command's major mission had been the support of the infantry, and now it was to be converted to operational use, more or less corresponding to the German view of tank utilization. In this condition, it was caught up in the German offensive and suffered heavy losses from which it was never again completely to recover during the whole war. The degree of training, especially in the subordinate command and in the mastery of weapons on the part of the individual crews, with some exceptions, remained quite low. The performance of the Armored Command was also negatively influenced by its limited radio equipment. To a certain degree, on the other hand, this lack of training was equalized by the fact that the Russian soldier, as a result of his affinity for nature, brought along with him into the Army skill in utilizing the advantages of terrain and of craftiness.

The German soldier who has learned to know the manner of fighting of the Russian Armored Command has no doubt that the Command, since the end of the war, has earnestly set about to remove deficiencies and today has achieved a degree of training high enough to allow it to fully utilize such possibilities as exist in its armored equipment.





# WINTER COMBAT FOR ROUTES AND VILLAGES

In January of 1942 the German front in Russia ran approximately 50 kilometers east of Kursk on a north-south line. Exhausted German infantry divisions were employed in broad sectors, occupied and kept under surveillance only at strong points.

German troops were experiencing the bitter Russian winter for the first time. Deep snow covered the ground, and temperatures dropped to 30° below zero. A sharp wind swept across the plains.

The terrain east of Kursk was undulating. Observation was extensive, as there were no woods. The monotony of the rolling landscape was interrupted only by a great number of villages, most of them spread over large areas.

Movement off roads and on the ridges was hampered by heavy snowdrifts. The German troops, not yet familiar with such conditions, had to fight the forces of nature. Car, truck and tank motors failed frequently, as did the mechanical weapons. Shortage of wood hampered the construction of positions. The defense was concentrated on the defending of villages.

With superior numbers, the Russians exploited their greater experience and acclimatization in winter conditions by weakening the German front through minor attacks and local

gains of territory.

In the sector of one division, the Russians skillfully reconnoitered a boundary position between two regiments and succeeded in breaking through with armor and infantry along the highway leading to Kursk. An armored formation of about twenty-five T-34s with mounted infantry broke through and dashed in the direction of the city, where a railway and highway vital to German supply ran parallel to the front.

The villages along the highway leading to Kursk, containing only supply troops and trains, were quickly captured by the Russian tanks.

On the second day they met quickly rallied German security forces about 10-15 kilometers in front of Kursk. Attempts to close the gap in the main line on the front with weak local reserves failed. Additional Russian forces, about two to three infantry battalions, partly on trucks, trickled through the gap. They kept the villages along the road occupied.

A weak German armored battalion of about 22 tanks, released from another sector, advanced into this area. In a surprise raid they recaptured the weakly occupied village of Vybolsova on the enemy's supply route, and the flow of Russian forces was stopped.

The German armored battalion

made thrusts from Vybolsova to east and west, harassing the Russians and halting the flow of supplies for the forces further west. In addition, the German force in the town succeeded in obtaining reinforcement in the form of an 88mm antiaircraft gun and a battalion of replacement personnel.

Three days after the German seizure of Vybolsova, the Russians attacked the village along the road from the west, using infantry and a few tanks. They were repulsed.

On the following day snow fell in dense flurries. Suddenly the Russians, coming across country from east and west simultaneously, made a surprise break into the city with heavy infantry forces. Tanks aided the advance from the west. Exploiting their cross-country mobility—their road clearance was greater and their ground pressure less than those of German tanks—the Russian tanks swept across country through terrain considered by the Germans to be tankproof.

Inadequate security measures made the surprise possible. The unseasoned young German infantrymen, unequal to the demands of combat in the East, cooperated poorly with friendly tanks and were defeated. The German tanks, inferior to the Russian in weapon effectiveness and mobility, were almost completely destroyed.

## Lessons

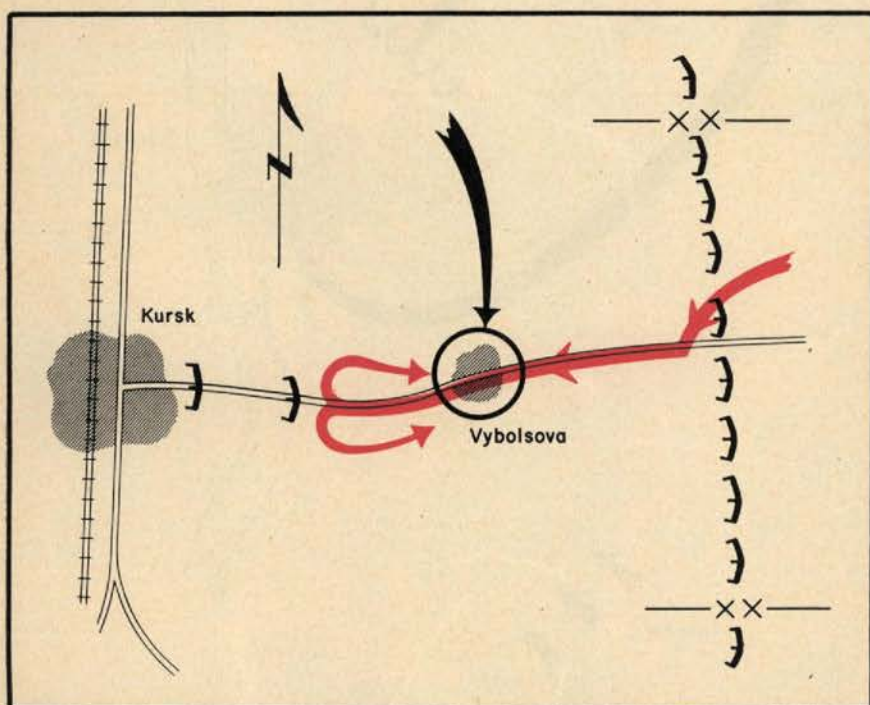
The operation indicates the importance of supply roads, most of which had to be made passable and maintained so for winter use.

The two-pronged Russian attack on the village of Vybolsova worked excellently. It was timed precisely, either by radio, undetected telephone lines, or civilians still in the village.

On the other hand, the operation demonstrates that an extensive advance, especially in winter, must be prepared in detail, and must be constantly reinforced. An armored formation, operating alone, can achieve only temporary success.

The German thrust into the Russian flank to halt the supply flow was proper. The enemy could not ignore it. Tanks without supplies soon become worthless.

Combining an unseasoned infantry battalion with an armored unit for such an independent mission was wrong. Such a unit becomes a liability for armor.





# AN INFANTRY REGIMENT IN DEFENSE AGAINST ARMOR SUPPORTED ATTACKS IN WINTER COMBAT

Following heavy defensive fighting in December of 1941, the 203d Infantry Regiment had withdrawn within its division sector, and had moved into a new defense position in front and on both sides of the village of Berestovaya, a settlement of stone houses which formed the nucleus of the defense.

A captured order indicated that an attack could be expected in the area by a force from the Russian Second Army, comprising three infantry divisions, one cavalry division, one armored brigade, and independent artillery units. Advance would be along the Lissichansk-Artemosk road, with the object of achieving a breakthrough.

The 203d Infantry Regiment was composed of three battalions, an infantry gun company and an antitank company. Each battalion was composed of three rifle companies and a heavy weapons company. All units were understrength.

The terrain was undulating and almost bare of woods, with many villages in the area. Snow covered the ground and temperature was about 15°.

Between the 18th and 22nd of December the enemy deployed his forces before the new position of the 203d Infantry. The German outposts were forced back on the position. Obviously the Russian attack was impending. In the evening of the 22nd, the Russians, in approximately battalion strength, attacked the 2d Battalion's position for the first time. Although the attacks on both sides of the road from Lissichansk were stopped by the defensive fire, farther westward a strong point of the 6th Company was overrun. Elements pushed forward into the village almost to the battalion command post. At that point the battalion reserve was committed and the positions restored.

On 23 December, several attacks in company to battalion strength along both sides of the road were repulsed by the 2d Battalion. As darkness fell, the Russians repeated the attacks east of the road. After brief artillery preparations on the 7th Company positions, they attacked with approximately two

battalions supported by ten tanks. At two points near Reference Point 205.0 the tanks and infantry overcame German strong points and broke into the front. Artillery fire concentrated on the tanks forced them to retreat. The Russian infantry, losing its support, made no further headway. The German reserve battalion was committed, repulsed the Russian infantry, and remained in the village position.

On the 24th several attacks on the road and, for the first time, on the left flank of the 1st Battalion, were repulsed. No tanks were committed on this day.

On Christmas morning the Russians again attacked east of the road with about two battalions of infantry. They were stopped by artillery fire. Shortly afterward they attacked the 1st and 3d Companies from draws northwest of the village. Both of these attacks, supported by mortars and carried out by one to two companies, could have been repulsed. But around 1400 hours, while a sharp east wind was blowing, ten to twelve tanks suddenly emerged from the draws and advanced against the western part of the village. Accompanied by infantry, they advanced slowly, in groups, covering the German strong points with fire. The edge of the village lay under artillery and mortar fire.

It was 1500 hours when five tanks

with infantry entered the position of the 1st Company, which was defending more than 1000 meters of front with only 40 men. The Russians entered the village and several tanks, separating from the infantry, struck south toward the railroad embankment. After two tanks had been shot out of action by AT guns, they were turned back.

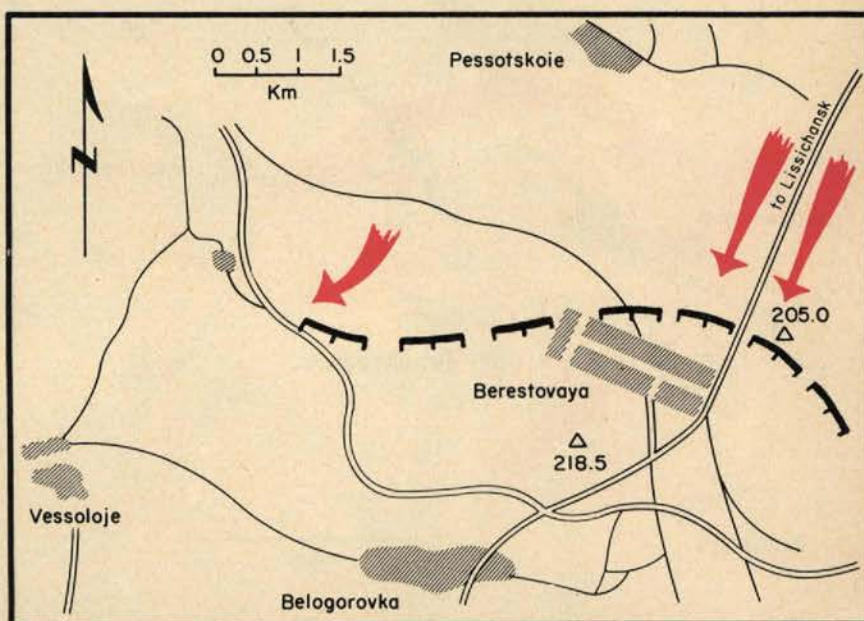
In a counterattack, the 10th Company cleared the village again. The staffs of the 3d Battalion and the 9th Company were also pulled forward from Belogorovka and employed. By 2100, the Russians, fighting tenaciously, nevertheless were beaten and the line of resistance reoccupied.

Losses necessitated a reorganization of the 203d Regiment, and all three battalions were assigned adjoining positions, each keeping one company in reserve.

Before daylight on 26 December, the Russians began heavy attacks in the area between the village and the railroad to the west.

Seventeen tanks approached the right flank of the 1st Battalion, accompanied by two to three battalions of infantry. The positions of the 2d Company were smashed by the tanks and the Russians reached the railroad embankment, where they were stopped by effective artillery fire.

Farther to the east, tanks appeared in front of Hill 218.5, a conspicuous knob. An 88mm antiaircraft battery south of it shot one tank out of action before being smashed itself. On Hill 218.5, which offered no cover, the





German troops could not hold their positions in the face of tank fire, and were withdrawn to the railroad south of the hill.

There was no contact between Regiment in Belogorovka and the 1st Battalion; the situation there remained obscure until evening. A divisional reserve battalion and a cyclist squadron were assigned to the regiment. With the Russians again entering the western part of the village, toward noon the combat team received permission from the regiment to abandon the village.

Intervention by bomber planes brought no appreciable relief, since the target area could not be ade-

quately defined due to the confused combat situation.

At noon the divisional reserve battalion and five assault guns were turned over to the commander of the 2d Battalion, who exercised command in the village. Thereupon he decided to continue to hold the village.

Around 1600 hours, Russian infantry supported by a few tanks attacked the 2d Battalion from along the road. Again two strong points were lost at Hill 205.5, and the Russians broke in. A German counterattack by the reserve battalion, supported by the assault guns, eliminated the penetrations and restored the lines by midnight. There was no contact, however,

with the right flank of the 1st Battalion, as they had not reoccupied their old positions.

At dawn on the 27th the attacks were repeated with the same strength as the preceding day. Through the gap between the 2d and 1st Battalions, strong Russian infantry supported by at least twenty tanks attacked the village and the 1st Battalion positions along the railroad embankment. At the latter point, eight newly committed antitank guns were overcome by the tanks—the 37mm AT gun was not adequate against the T-34. The embankment was captured. Only the left flank still clung to it.

At about 1100, after vigorous prepa-

## WINTER COMBAT BETWEEN TANKS AND INFANTRY

In the course of the winter battles of 1941-42, the Russians attempted to reoccupy the city of Kharkov from the area east and southeast of the city. Severe cold prevailed and the snow was deep, especially in low places.

At the end of January, in the midst of heavy snow flurries, the Russians moved in close formation with vehicles along the road from Brigaderovka into Borshchevov, where a

German battery fired on them. Thus the month ended, giving way to a quiet 1st of February.

On the 2nd the Russians fired upon the German advanced strong points with 100mm and 122mm shells, while undertaking a reconnaissance in force against Strong Point No. 3 with two companies, against Strong Point No.

4 with a strong platoon, and against Strong Point No. 5 with one and a half companies. The attacks were repulsed.

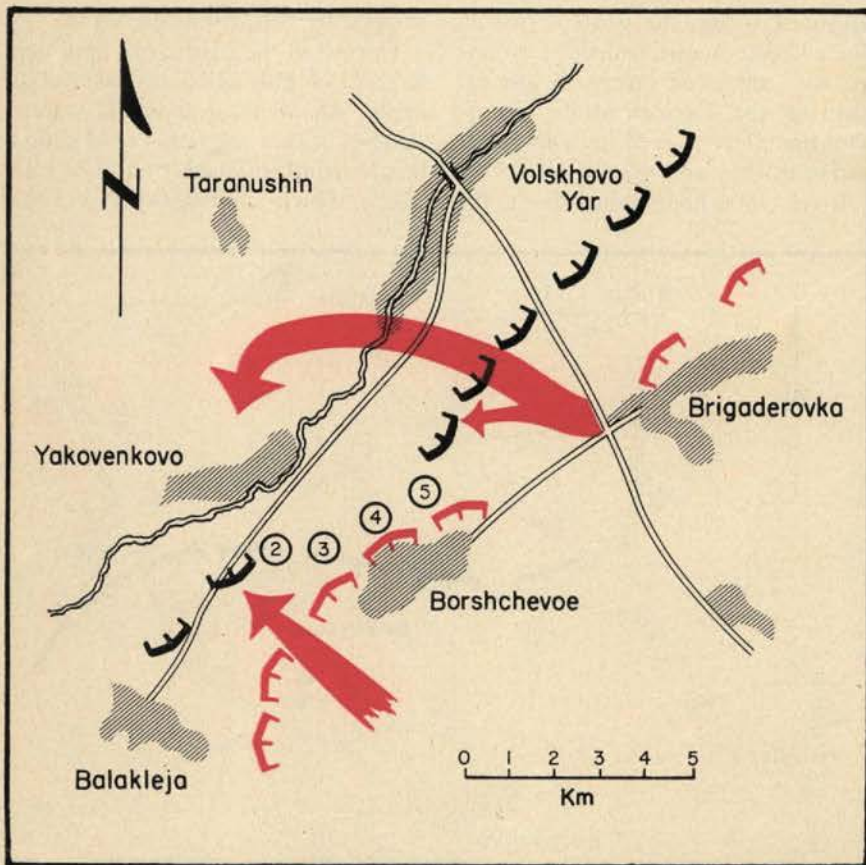
During the small hours of the next morning there was strong artillery fire of all calibers and penetration in the direction of Taranushin. It was repelled at Strong Points Nos. 2, 3 and 5 with the aid of dive bombers.

On the 4th of February the Russian attacks continued. German defense faced east and north, contact with the unit on the left having been disrupted. An infantry platoon reinforced by four tanks was ordered to establish contact along the road Yakovenkovo-Volokhovo Yar. As a result of flanking fire from the valley of the Balakleyka River, the thrust stopped halfway. The platoon disengaged itself when darkness fell and brought in thirty prisoners.

In early morning of February 5th there was another Russian thrust against the strong points, which was fought off. The advance was westward from a northeasterly direction. Heavy concentrations at Taranushin were attacked by dive bombers.

A night attack against the northern part of Yakovenkovo was repulsed. On the afternoon of the 6th, another attack supported by a few tanks, succeeded in penetrating the village, but was eliminated in a counterthrust.

Renewed attacks by heavier forces were fought off on the 7th, with the Russians trying to break through at other points, hitting the right flank. Attacking forces were assembled in large draws and ravines and in patches of forest south of Borshchevov and ad-





ration by artillery fire, the Russians launched more tank-supported attacks against the village from northwest and west. The infantry were in approximately regimental strength. The enemy reached the center of the village and was again thrown back in a counterthrust. But other forces, also tank-supported, enveloped the village from the west after a sweeping move to the south. At 1400 the Russians again broke into the village from the west with infantry and tanks, and later in the afternoon, from the east. The German forces abandoned the village during the night, withdrawing to the embankment line.

At this point Russian losses had

been severe, and although attacks were continued the following days, their force had been blunted and a breakthrough prevented.

#### Lessons

This action is characteristic of winter combat, which highlights the importance of villages. The troops stick to them and defend their winter quarters with tenacity.

The Russian command showed, as it did in the majority of instances in this phase of the war, an astonishing dispersal of its attacking forces. This dispersal also applied to tanks. In this action they were used to accompany the infantry attacks. On the whole,

without accompanying tanks the Russian attacks were stopped by fire.

The seizure of the German village could have been accomplished more easily if the Russians had, from the beginning, tried to envelop it. A thrust to the dominating Hill 218.5 would have cut off the village from its supplies and thus rendered its defense ultimately impossible.

The excellent cross-country mobility of the Russian T-34 tanks permitted them to accompany the attacks in spite of the rather deep snow. They were able to maneuver well in the terrain in contrast to the German assault guns, which were hampered off the roads and had to be wary of drifts.

vanced with a ski battalion to the vicinity of the road, where defensive positions were prepared. Meanwhile, German forces were reinforced by a second battalion.

Early next morning strong Russian reconnaissance patrols advanced to probe for weak spots around the southeastern part of Yakovenkovo. In late morning the new German battalion attacked out of this area and restored the former MLR. Tank attacks by the Russians against Strong Point No. 5 with five tanks were beaten off.

Two days of quiet followed, and the weather turned warmer and thawing set in. Exploiting this weather, the Russians attacked with one battalion and eleven heavy tanks. The strong points were rolled up and lost. A counterattack by inferior friendly tanks was ineffective. A perimeter defensive position was set up around Yakovenkovo. The situation was critical. Four heavy tanks fired upon the village and retired under the fire of a quartet of friendly tanks. Toward noon of the 12th of February there was increasing enemy artillery fire on the German-held town, reinforced by rocket shells, antitank and mortar fire and at night by fire from regular Russian recon patrols at the outskirts of the village.

Before daybreak of the 13th the enemy started an attack from a Y-depression, with one battalion breaking, with loud huzzas, into the northwestern section of the village. Counterattacks by two companies in close combat destroyed the enemy.

On the 14th of February four heavy tanks fired upon the village, and an

attack with armor support was launched by the Russians at mid-morning. It was repulsed, as were attacks made the following day. The Russians then discontinued their attacks.

A report by the *Wehrmacht* High Command had this to say: A division in the area southeast of Kharkov, in extremely heavy defensive battles between 10 January and 7 February 1942, has repulsed 142 attacks from six infantry and two armored divisions. The enemy lost six thousand dead, twenty-seven tanks, fourteen guns, eighty-two mortars and two airplanes.

#### Lessons

Winter combat in extreme cold requires special measures. It consists of probing, wearing down, thrusting. Villages play a more important role. It teaches that a tough army which does not lose its nerve will not be vanquished.

Reconnaissance operations in force by the Russians usually mean that something is going to follow within the next twenty-four hours.

In deep snow, tanks must remain on high ground. The Russians often launch a few tanks as decoys for anti-tank fire, then attack with heavy elements. A tank thrust against a village is not tactically sound unless it proceeds under the protection of artillery fire and with accompanying infantry.

For tanks, broad tracks with their resulting distribution of ground pressure are of great advantage in winter combat, a fact which the Russian tank industry has taken into account.

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# BATTLEFIELD TANK RECOVERY IN KOREA

*A tank costs a sizable piece of money these days. To get our money's worth out of it requires the maximum use. Thus our battlefield recovery, although far from being a glamorous undertaking, becomes a highly important operation. Here is a picture story of a recovery operation by the 70th Tank Battalion in combat in Korea.*

The object of the pictured recovery operations, a medium tank, M4A3E8 had, as the favorite expression of soldiers goes, had it! The tank, along with three of its fellow tanks, had been in an infantry company's patrol base perimeter one memorable night when the Chinese decided to liquidate patrol base and tanks. During the ensuing fight, in which three Chinese companies were soundly thrashed, this tank slipped off in a rice paddy while maneuvering in the darkness for a better firing position. The gasoline tanks were full, since the tank had been refueled the evening before, and gasoline began pouring from the gasoline cap air-vent hole. The Chinese swarmed over the mired tank and were promptly shot off by one of the other tanks covering his helpless buddy. At this point some nameless Chinese qualified for the Peoples Great Big Hero Award with Sickles, Oakleaves, and Borsch (Posthumous). He exploded a pole charge on the rear deck of the tank igniting the gasoline, after which he departed to commune with his ancestors through the courtesy of a .50 caliber machine-gun slug. The tank burned and the crew bailed out after activating the fire extinguishers. The extinguishers had little effect on the fiercely burning gasoline and the ammunition exploded. The crew made their way back to the remaining tank of their section without molestation by the Chinese, thanks to the accurate gunnery of the covering tank which had rendered all Chinese in the vicinity not only supine but completely disinterested in the night's festivities. After the tank had cooled off (it took a couple of days) it was recovered, since some parts, mainly tracks and suspension system, were still in usable condition. The maintenance platoon of the 70th Tank Battalion (Heavy) undertook the job.

After removal from the rice paddy, the turret was traversed by winch and the tank was towed to the Battalion Maintenance Area. Here it was turned over to a Recovery Company for transport to the rear areas for salvage and possible rebuild. Who knows, this tank, or parts thereof, may yet see another battlefield.—LT. COL. CARROLL McFALLS, JR.

Additional caption data: Major Roger J. Teyssier

Photos by SFC William Darden



View of a burned out tank of Company A, 70th Tank Battalion, mired during a night action and knocked out by Reds.

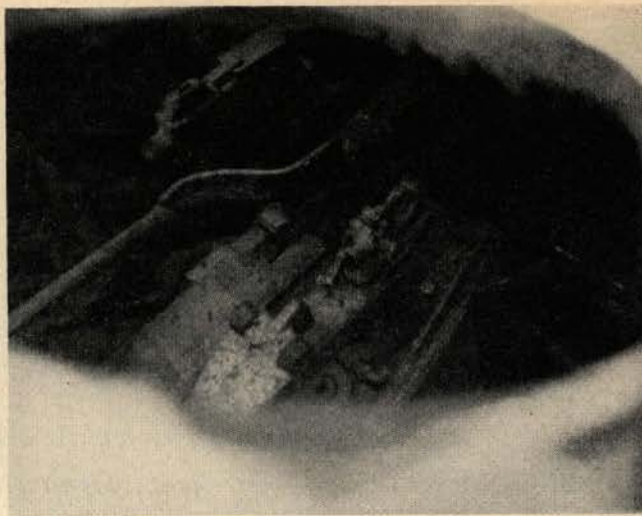


The fire leaves the engine compartment a mass of melted metal with exploded .30 caliber ammunition boxes outside.





Surveying the recovery problem. Members of the maintenance platoon pass a towing cable around the tank turret.



View looking through the commander's hatch into the burned out fighting compartment. Gun and recoil guard visible.



Towing cable is attached to snatch block and M32 winch cable is passed through block, for lifting sideways pull.



A second M32 is attached to the front of the tank in an attempt to pull the tank forward, but all to no avail.



As one M32 exerting the forward pull is not enough to do the job, an M4A3E8 medium tank is hooked to it in tandem.

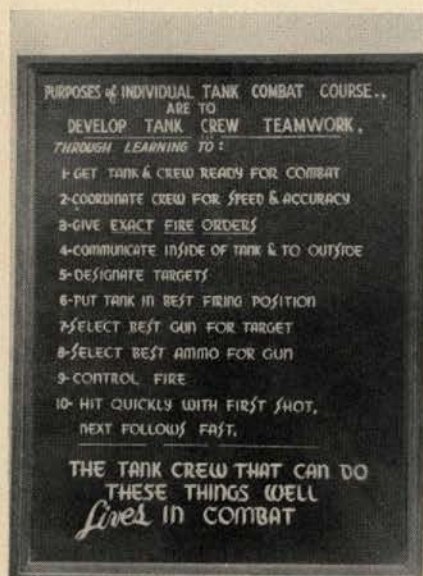


All together . . . Heave! Teamwork and know-how pay off as the tank is pulled out of the hole and headed for salvage.



# Training Tank Crews

by COLONEL L. L. DOAN



Some of the purposes behind the course.

*The tank is a complex and potent weapon whose operation requires the ultimate in teamwork on the part of crew members. The tanker is a specialist who must know mechanics, maintenance, communications, gunnery and tactics—things to which the American soldier, by virtue of his national background, is most adaptable. One thing ties the whole together—training! Here's one story of how it's done.*



Relief map for briefing at the start.

**D**EEP in the heart of Texas at Fort Hood, home of the 1st Armored Division, Major General Bruce C. Clarke has built into his Individual Tank Combat Course all the experience of his years of training armored soldiers and armored units. The possessive pronoun is used advisedly, for every detail of this course, from the selection of the terrain through the many problems of construction to the finished course were personally planned and supervised by the General. Without exception, every Armor Officer who has seen this course has commented that this is the finest training course of this type an armored division ever had.

The course, 5800 yards from start to finish, presents eight different situa-

tions to the crew. Each is a realistic one. The targets are all operated by concealed range personnel in bunkers. The movement of the tank is observed by the target operators through periscopes, so that each target is made to appear at the proper time as the tank progresses around the course. Service ammunition is used and hits are scored. As soon as the tank has moved on to the next target, the scores are telephoned in to the Control Officer so that when the crew returns to the starting point, dismounts, and assembles for the critique, they see their complete scores posted on the large score board.

The course is laid out with a crushed stone and gravel, all-weather tank trail. The tactics are built into the course. This permits the tank commander to devote his entire attention to developing the teamwork of his tank crew. Each member of the crew learns his individual duties and at the same time learns to coordinate his actions with the other members

of the crew. If any one members fails, it is immediately apparent to the others that the crew must function as a well drilled, well coordinated team. Each crew runs the course until it has qualified.

Each tank has a conducting officer riding on the rear deck as it goes through the course. This officer grades the tank commander on his selection of firing positions, his fire orders, and the speed with which each target is engaged as it appears. He notes the control the commander exercises over the crew, the steadiness of the driver, and the manner of performance of each crewman. He also functions as the Safety Officer.

Usually the course is assigned to one company for a day. The using unit moves out to the nearby bivouac area the night before, so that it is on the course and ready to go soon after the first light the next morning. The bivouac is tactical with predawn stand-to rigidly observed. The first tank is on the course and ready to roll

Colonel L. L. Doan commanded the 32d Armored Regiment of the 3d Armored Division in the European Theater in World War II. He is now Assistant Division Commander of the 1st Armored Division at Fort Hood, Texas.





The .50 caliber has been mounted forward for tank commander to fire on targets.

as soon as it is light enough to shoot. Tank follows tank through until nightfall. Concurrent training is held for the remainder of the company during the day and a good unit can put 20 crews through in a day.

After each crew has loaded its tank with ammunition, boresighted its gun and completely checked the tank to see that it is ready to go through the course, the tank is moved to the "Ready Area." The crew then dismounts and reports to its Conducting Officer in the critique area. Stands are set around the 18' by 30' cement relief map on which the course is pictured. The conducting officer first gives them the general situation. "Your tank company is the right flank guard of a battalion attacking from Gatesville southeast towards Killeen. Your tank fell out due to damage caused by enemy fire. You were given instructions to proceed individually along the company route and catch up with it as soon as your vehicle was repaired. You have been told that there may have been small enemy elements bypassed and that you may run into enemy, including tanks. Repairs were made and you have reached this point." The Control Officer then points out the position of the tank on the terrain map.

Following the briefing, the tank crew returns to the tank, mounts, and moves to the "Ready Line." Here the Conducting Officer mounts, directs the tank to move forward fifty yards, halt, and half-load all machine guns. As soon as ready, the tank is ordered to move out.

When the tank reaches point "A," the first targets appear to the left of the trail—six silhouettes come up.

They are mounted in German type holders so that when they are hit they drop down. The bow gunner, or "Bog" fires at them while the tank continues to move.

On reaching point "B," a silhouette of a plane is released from a cliff and slides down a wire and disappears to the left of the path of the tank. The tank commander takes it under fire with his .50 caliber machine gun.

The tank again moves out and on reaching point "C" a silhouette of a truck appears moving along the left front. It is mounted on a sunken track and moves about 100 yards before it disappears in the brush. It is fired on at about 400 yards by the coaxial .30 caliber machine gun.

On reaching point "D," the silhouette of a tank appears. The tank commander stops his tank and takes this target under fire at about 700 yards range. The target is visible long enough for the tank commander to get off two rounds providing the first round is off in 15 seconds and the

next round follows in 10 seconds.

Again moving out, six silhouettes appear on the right at point "E" which are taken under fire by the "Bog."

As the tank approaches point "F," a charge explodes under a clump of trees to his left front at about 400 yards. The tank commander reconnoiters the area by fire from his .50 caliber machine gun and continues on to assist the infantry. He observes their tracer and moves into a full defilade position at "G." The tank commander fires HE adjustment (three rounds) at a point in the edge of the woods at a range of 500 yards as designated by the rifle fire and knocks out the AT gun position. He decides the area is heavily held so he backs his tank down behind the hill from his firing position, and swings around to the right to find a covered approach in order to by-pass this area. The tank follows the trail towards "H."

At point "H" the tank comes out in the open and is fired upon from the left flank by an enemy tank which is moving out. The tank commander swings his tank to face the enemy and fires two rounds of shot at approximately 500 yards range. This enemy tank is a silhouette on a sunken track, as before. This completes the course. The tank is now two miles from its starting point.

After guns are cleared and the muzzle is elevated, the Safety Officer gets in the tank. He completes his check, the tank commander then buttons up and follows the trail, crossing the creek on a treadway bridge, around to the starting point for the critique.

The next tank starts the course as



At left the aerial target completes its run after coming under fire of the .50.



soon as the preceding tank fires at the last target.

At the critique the conducting officer reviews the orders and actions of the tank commander and the actions of the crew in each situation. He points to the score board and indicates the number of rounds used and number of hits and grade awarded on the fire orders and number of seconds it took to get off the first shot and any other pertinent comments for each situation. He awards a grade of "satisfactory" or "unsatisfactory" on each phase. At the completion of the critique he informs the crew of their overall rating. A very high standard has been established so that the crew which earns a "satisfactory" rating must have proven that it is in fact a well trained tank crew capable of surviving in combat. When a crew achieves a rating of "Excellent" and passes the achievement tests in driving, maintenance and communications the crew members are awarded certificates as Tankers.

Every item of appointment and construction in the course has been directed toward presenting a series of realistic situations to the tank crew. The silhouette targets are an excellent example of this. The basic idea was borrowed from the Germans and has been improved upon so that these targets rarely fail to function properly. An operator, concealed in a bunker, observes the approach of the tank through his periscope. At the proper moment he pulls a lever which,



Critiquing the run with crews whose marks appear on the large scoreboards.

through a cable on pulleys, raises the silhouettes to a vertical position. They are held in this position by the sear of a trigger-like mechanism. The impact of a bullet on the plywood, heavy-rubber, fabric backed silhouettes moves the target just enough to release the sear. This, in turn, releases a spring which pushes the target forward and down. The gunner thus knows instantly when he obtains a hit. The airplane silhouette operates by gravity, sliding down a cable. Some experimentation was required to decide on the right size for this target so that it would have the realistic appearance of a low-flying plane. The tank commanders soon become very proficient at hitting this target with their .50 caliber machine guns. All

the mounts for the .50 caliber MG on the tanks in this division have been moved to a forward position on the turret and the tank commander can operate this gun from his usual position in the turret.

The truck and tank targets are mounted on small cars which run on steel tracks. They are pulled along by a cable which is operated by a motor and windlass. The rate of movement of the target can be regulated for any speed up to 12 miles per hour.

The purposes of this Individual Tank Combat Course are outlined on a large board alongside the score board in the critique area.

The Range Detail required to operate this course includes a Range Officer, a Range Sergeant, four NCO's in charge of bunkers, with six men and an Engineer Detail to set out the explosives and two vehicles with drivers for the Range Detail. In addition, an infantry squad is detailed weekly for their part in the course. The unit using the course provides a Control Officer and Assistant, three Conducting Officers and a telephone operator. In addition, they provide a ¼ ton truck with radio and driver.

General Clarke has incorporated in this course the best features of the many courses he has seen during his long experience with armor. In addition, he has added many ideas of his own. Without a doubt, this is the finest Individual Tank Combat Course for training tank crews that has yet been developed.

## FIRST ARMORED DIVISION



### TANKER AWARD

HAVING QUALIFIED AS A TANK GUNNER, DEMONSTRATED PROFICIENCY AS A TANK CREWMAN, SHOWN THE ABILITY TO MAINTAIN A TANK AND ITS WEAPONS, AND HAVING PARTICIPATED IN THE INDIVIDUAL TANK COMBAT COURSE AS A MEMBER OF A CREW THAT RECEIVED A RATING OF EXCELLENT, IS HERE BY DESIGNATED AS A TANKER

Date \_\_\_\_\_

Major General, U. S. A.  
Commanding

The award inspires each tanker to turn in his best effort for his team.



# TRENDS IN ARMOR

## *A Presentation of The Armored School to the Annual Meeting of the Armor Association*

**T**HROUGHOUT time, armies have constantly striven to produce in a weapon or arm a combination of three fundamentals—fire power, mobility, and protection. Armor provides all three.

Any misgivings as to the role of armor have been dispelled by the record of armor in World War II and again in Korea. The lessons learned during these encounters give conclusive evidence that our basic armor concepts of tactics and techniques are sound and realistic. Changes in tactics and techniques are generally made necessary only because of changes in the types of terrain on which we must fight.

Armor, having proved its value in present-day fighting, can look forward to playing a prominent role in any future war.

To qualify this statement, let us analyze the present-day situation and see what it reveals.

First, in any future war we will likely fight a *numerically superior enemy*, one that will, in all probability, be well trained and equipped and have available a great quantity of mechanized equipment.

Second, on the basis of our national policy, we will never start a war by attack—our action therefore will be *defensive* until our offensive power has been developed.

Third, we will probably be faced with *partisan* and *guerrilla* activity on a larger scale than we have heretofore experienced.

Fourth, we are now in an *atomic age* and are confronted with new mass destruction weapons.

Based on these facts, why, then, do we make the statement that armor is destined to play a prominent role?

To explain this, let us look in more detail into what the tasks of armor probably will be. We can, for purposes of discussion, tie together the first two points of numerically su-

perior opponent, and initially a defensive type action.

Assuming we must fight on the defensive, perhaps for months or even years, we must not allow our army to generate a defensive mentality. To do so is to play into the hands of an aggressive enemy. Although the reason for defending a place or area is to gain time or to prevent the enemy from occupying it, such a defense must also always aim at containing as many enemy troops as possible. In doing this, the enemy's main offenses are hampered and our own operations assisted. Therefore our defensive operations should be in the form of offensive-defense operations.

In the offensive-defense, armor seems to have a major role. In this type of action, success is based on utilization of a highly mobile team using a spiderweb type defense—a system which aims at netting, weakening, slowing up, and eventually immobilizing the attacker, backed up by the counterattack which aims at the enemy's defeat and destruction.

Let us examine how armor might operate in the defense:

There are two main problems in defense—stopping the initial attack, and stopping the forces following the initial attack.

The job of holding the defensive system will fall mainly to the infantry division with its organic armor.

The main armor strength should be concentrated under central control in rear of the defensive system since their best role is the counterattack against such enemy forces as succeed in breaking through that system.

Enemy attack of our defensive system can only win real victory, if in addition to his penetration his combat teams can so clear the way through the gap created that his normal infantry divisions can be passed through the defense system. Therefore, a major objective of the defense should be

to separate the enemy's armor forces from his infantry and to prevent the penetrating force from being reinforced or supplied. A second requirement is to gain time, delay, and if the enemy's penetrating force cannot be fully halted, cause them to fight and expend ammunition. This will greatly assist our own tanks when we meet the enemy in the counterattack.

To achieve this objective, the defensive system is based on strong points established in depth designed to disintegrate the attacking force. The strong points are so organized that they can fight independently even when surrounded. The attacker is thus forced to fight a number of separate battles, his supporting fire and attacking units dispersed, making his attack less effective. Further, these strong points must be so organized that they form pivots of maneuver for counterattack. Thus the static fire of the strong points and the mobile fire of the counterattacking armor combat teams are combined. This type of defense then becomes an offensive one, and advantage is taken of every opening given by the enemy. This would apply whether armor is operating alone or in conjunction with infantry units.

Similarly, in the face of any enemy who leans toward mechanization, we must build within our forces an offensive type weapon as well as a defensive type weapon. Again, we have proven that the tank embodies these features which, when coupled with its tremendous fire power, mobility, and resultant shock action, make it a potent, key member of the counter-attack force.

For its own passive defense against long-range enemy artillery fires or air attack and against atomic attack, the armored division can capitalize upon its mobility by dispersing over a wide area. Its communications and training permit it to be rapidly massed into a



powerful force to accomplish its mission, and when its mission has been accomplished, again dispersing, presenting a nonremunerative target to the enemy.

While conducting normal offensive operations, if forced by the dictates of the situation to defend itself, the armored division will, because of extended frontages involved, normally adopt a mobile defense. Generally, the same concept as applied to defense on a broad front obtains.

Whether conducting a defense itself or when acting as the reserve element of a larger force engaged in defense on a broad front, the inherent characteristics of the armored division contribute much to the successful accomplishment of the mission.

Another thought to overcome enemy numerical advantage is by insuring that our armor is capable of maintaining superior fire power.

Assuming that the equipment on both sides is equal in quality and one side has a greater number of weapons than the other, then the side with greater number of weapons will also have greater potential fire power. But the principle to be considered is that in computing comparative strengths, we must think in terms of weapon-power and the sound application of the potential fire power it represents, and not in terms of numbers of pieces. Therefore, we must insure that our personnel are capable of getting the most from their weapons. As outlined by the Army Field Forces Board No. 2 speaker previously, these weapons are being provided armor units. It is up to us to train the personnel.

The third point mentioned earlier was the role which partisan and guerrilla activity will play in future war. In considering this problem we must include the possibilities of aerial introduction and resupply of forces capable of guerrilla activity, because every indication points toward the perfection of this capability. How will this activity affect armor?

The action in Korea has reemphasized for us the effect of guerrilla activity in our operations. Further, any operations which we may be forced to undertake in the future in any of the world's potential battle areas will probably find us confronted by a similar situation. Whether the persons carrying out guerrilla tactics are iso-

lated bands of by-passed enemy troops or organized guerrilla forces makes little difference. The net results will be the same—a threat to rear area installations and troops, and insecure supply lines.

The answer to this threat is as old as warfare itself. SECURITY. Security is the responsibility of each commander at each echelon. Security is a perimeter requirement, and its provision must be continuing both as to time and disposition. Every combat unit must provide for itself the necessary degree of security against guerrilla forces.

The armored division is particularly well organized and equipped to secure itself against guerrillas, both by defensive and offensive measures. If proper attention is directed to the normal security measures employed by the armored division, the effects of guerrilla activity will be, to a great extent, nullified.

When the armored division is in corps reserve, poised as the main striking force of the corps, we believe that guerrilla activity can have little effect on the accomplishment of any mission assigned the division. True, if guerrillas are active or known to be present in the corps area, additional security requirements exist; but again, if the proper security measures are employed, the capabilities of the guerrilla will be minor.

When the armored division has been committed deep into the enemy's rear areas, and guerrillas are active or by-passed enemy bands are known to be present in the area, additional security requirements exist. It will be necessary to provide security detachments for supply convoys and to provide additional security for trains elements. When the lines of communication become overextended to the point where the security requirements interfere with the accomplishment of the mission, aerial resupply may be instituted, vertically enveloping the guerrilla or by-passed bands of enemy. Aerial resupply may be instituted for many other reasons as well.

As for the impact of the tactical use of atomic weapons on armor, which is our fourth consideration, it appears that armor is the ideal basis from which to perfect the new defensive and offensive measures which will be required for survival on the atomic

battlefield and to carry the fight to the enemy. Armor is an ideal weapon to use in transition to the offensive phase.

Atomic explosions offer a new problem in that they will cause destruction covering a sizable area. This is possible with conventional weapons, but the time elements differ.

The coverage is instantaneous with "A" weapons, whereas with conventional weapons it requires hours or even days. Such an explosion will obviously require individual protective measures far advanced over those now in use. You are aware of the recent tests conducted in Nevada in which various items of equipment were exposed to atomic blast. It is gratifying to note the relative immunity of armored vehicles as compared with other types of equipment. Picture, then, if you will, the advantages offered if ground personnel in battle were mounted in fully mobile armor vehicles whose characteristics would protect them from blast, heat, and radiation.

Add to this protection the element of mobility. The use of atomic weapons will multiply the value of mobility. Mobility will be essential for rapid dispersion should the enemy employ atomic weapons. Again, mobility will be essential for subsequent rapid concentration of the dispersed units at decisive points for attack.

The inherent fire-power characteristic of armor will be available to carry the fight to the enemy to follow up friendly use of atomic weapons, or to counterattack following the enemy use of atomic weapons. This factor is of utmost importance since any tactical use of atomic weapons should logically be in conjunction with a ground attack.

Another factor considered of great importance concerning use of atomic weapons is the psychological effect. Again armor offers the best defense now available because of the individual's knowledge that he is protected from direct effects, his weapons will be immediately available, and he can move. Add to this picture the delivery of atomic weapons by tactical air, artillery, or guided missile. Such capabilities can provide this type of support for armor to any distance conforming to the speed of armor.

Fundamentally, then, armor is the best force for the atomic battlefield.



In conjunction with tactical use of atomic weapons, armor appears to be the ideal teammate.

Now let us see how we can *improve armor* so as to better cope with future war. The requirements include the provision of better guns, improved motors with less fuel consumption, and increased cross-country mobility.

In increasing the cross-country mobility of armor, more full-track vehicles must be added to the armored division. The present-day armored division is not in the full sense armored; some nine-tenths of the vehicles are of the wheel type. This means that the present armored division has only a small armorhead with a long wheel-tail. Thus the head must separate from the tail when an obstacle is reached, because most wheeled vehicles do not have the cross-country mobility of full-track vehicles. This situation is being partially corrected by addition of an armored personnel carrier. Thus the final armored track element will be added to the tank-infantry-artillery-engineer team. Further, this type vehicle may be used for supply transportation, completing the picture.

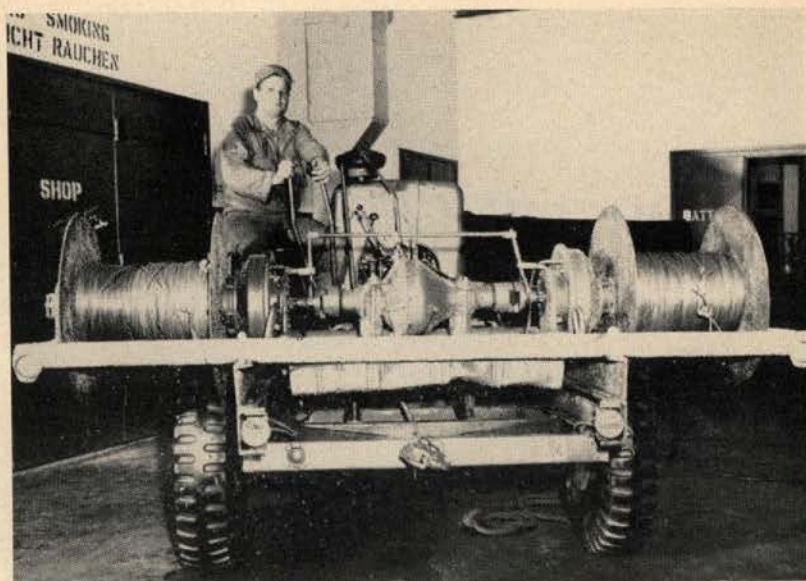
Of course, the use of track vehicles for supply would create problems, but another solution may be in the use of aerial resupply by helicopter. The development of helicopters capable of carrying up to 20,000 pounds and the ability of these vehicles to operate without conventional landing fields makes the possibilities for their use unlimited—not only for resupply purposes, but for reconnaissance, troop transport, evacuation, communication, and delivery of pods containing maintenance shops and hospital operating rooms to wherever they are needed.

Finally, we say that because of the characteristics of armor it is an indispensable element in fighting the type of war of today and in the foreseeable future.

The need for armor is a vital need, and it is urged that consideration be given to providing more actual armor type units in the Army. The ratio of armor to infantry in the Army today is small. The amount of armor we have today would not be sufficient to equip even one type field army.

Armor has a battle role that is totally unique, a role that cannot be fulfilled adequately by other type units through mere hasty adaptation.

**ARMOR—January-February, 1952**

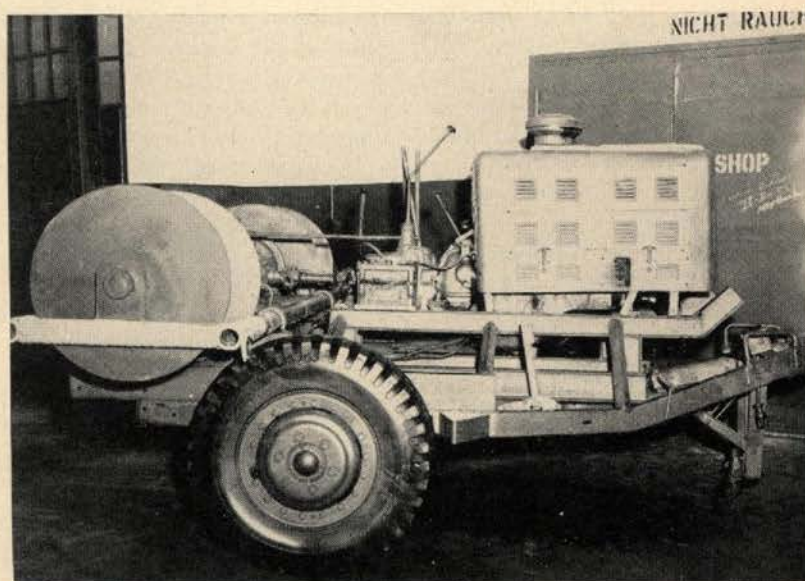


The inventive genius of Sfc Anderson M. Nunnally has made tank weapons firing at moving targets a reality for tankers of the 6th Armored Cavalry Regiment in Germany. With the help of the 8th Ordnance supply, Sgt. Nunnally secured a salvaged GMC 2½-ton engine and transmission, and a chassis from an M-10 trailer. With a few other parts, the rest was a cinch for the Service Company N.C.O., the chief welder.



6th Armored Cavalry Photos

Sfc Nunnally has ten years in the service. During World War II he served as a welder for the 71st Regiment, of the 44th Division.



The target puller tows a sled on which is mounted a six-foot target, and will operate over any type of terrain. Tank firing is thus very effective.



# Cooperation in **COUNTERTHRUST**

by **LIEUTENANT THOMAS W. STOCKTON**

**O**N D-minus-1 I moved my 3d Platoon of the Tank Company, 2d Battalion, 6th Armored Cavalry Regiment, across the road to join the British battalion, Grenadier Guards, to which I had been attached. The British battalion and our 2d Battalion were attached to the British 2d Division, forming the Aggressor Forces for Operation Counterthrust.

The 3d Platoon was a pretty self-sufficient unit, with two gas trucks, a radio repairman, a mechanic and an aid man. We carried enough supply to see us through.

Having made a prior recon with Lieutenant Colonel Tom Butler of the Grenadier Guards, to see how we could best tie my tanks into his bivouac area, I now ran my 9D trooper boats down at the heels in placing the tanks and putting out security. We were under radio blackout and a tank platoon leader has no vehicle under 46 tons to wander around in.

I reported to the battalion commander, who briefed me and gave me a copy of the operations order for D-Day. Communications, an immediate problem, was solved by giving the Guards an AN/VRC-3 radio from one of the tanks. The colonel carried this in his jeep.

We jumped off into Blue-land the following morning. The Guards were "lorry borne," and we made good time. In march order I followed the Command Group, which followed number 2 and number 3 Companies.

First objective of our force was 10 km. off, and we took it without a fight. Number 3 Company passed to the lead with our group right behind.

## Up Against Resistance

About 5 km. further down the road 3 Company was stopped by infantry and AT guns in strong positions. Colonel Butler called Captain Radcliffe of 3 Company and me forward, directing me to put one section of tanks in the woods on the west of the road to cover by fire the withdrawal route of the enemy. The other section was to carry 3 Company into the woods east of the road and support their attack onto the objective.

We loaded all the infantry we could carry and made the two miles to the woods in short order. Here the infantry de-tanked and hit the trees, with our tanks 50-70 yards behind. Captain Radcliffe rode my tank, which kept him in a good position to control his platoons. The infantry reconnoitred tank paths through the woods, and we hauled up 50 yards short of the open on the far side of the woods.

We took a quick look at our objective from there, and spotted two sacked up Centurion tank crews in the village. Captain Radcliffe decided to swing left with his infantry through a long neck of trees, assaulting due west onto the objective while the

tanks supported by fire from their present positions.

Failing to contact my other section, I went to work on the two Centurion tanks of the Blues, while 3 Company went onto the objective in 30 minutes. My section got credit for two Blue-land Centurions, while the other picked off two AT guns and some two dozen withdrawing infantry.

After taking the objective I moved my platoon forward and placed it to cover likely areas of armored counterattack. Since we poor platoon leaders have no jeep, I put another two miles on my boots checking positions. I was a little late getting to one of my tanks, with the result that he was knocked out when he inadvertently outran his cover and gave a Centurion a neat side shot at 800 yards.

An umpire decision prevented further movement forward on that route so Colonel Butler ordered me to leave one section with Radcliffe and to take the other to the 2 Company area 3 miles back and attack on another route. Tanks led on this next move with infantry following in trucks. Major Rasch (2 Company CO) stopped me after 5 miles of road motoring, complaining that I was outrunning his trucks! I obtained permission to move the tanks another 500 yards to a point from which I could recon the area to the front while infantry closed up. (Oh for a jeep!). Upon arrival at this point I was dismounted and searching the area to the front when I picked up a Centurion about 300 yards off moving behind a line of trees straight for us.

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**First Lieutenant Thomas W. Stockton** graduated from the United States Military Academy in 1949. He attended the officer Basic courses at Fort Riley and Fort Knox. His first unit assignment was the one about which he writes in this article. Recently he requested and received an assignment in a Reconnaissance Platoon—in E Company, 6th Armored Cavalry Regiment in Europe.

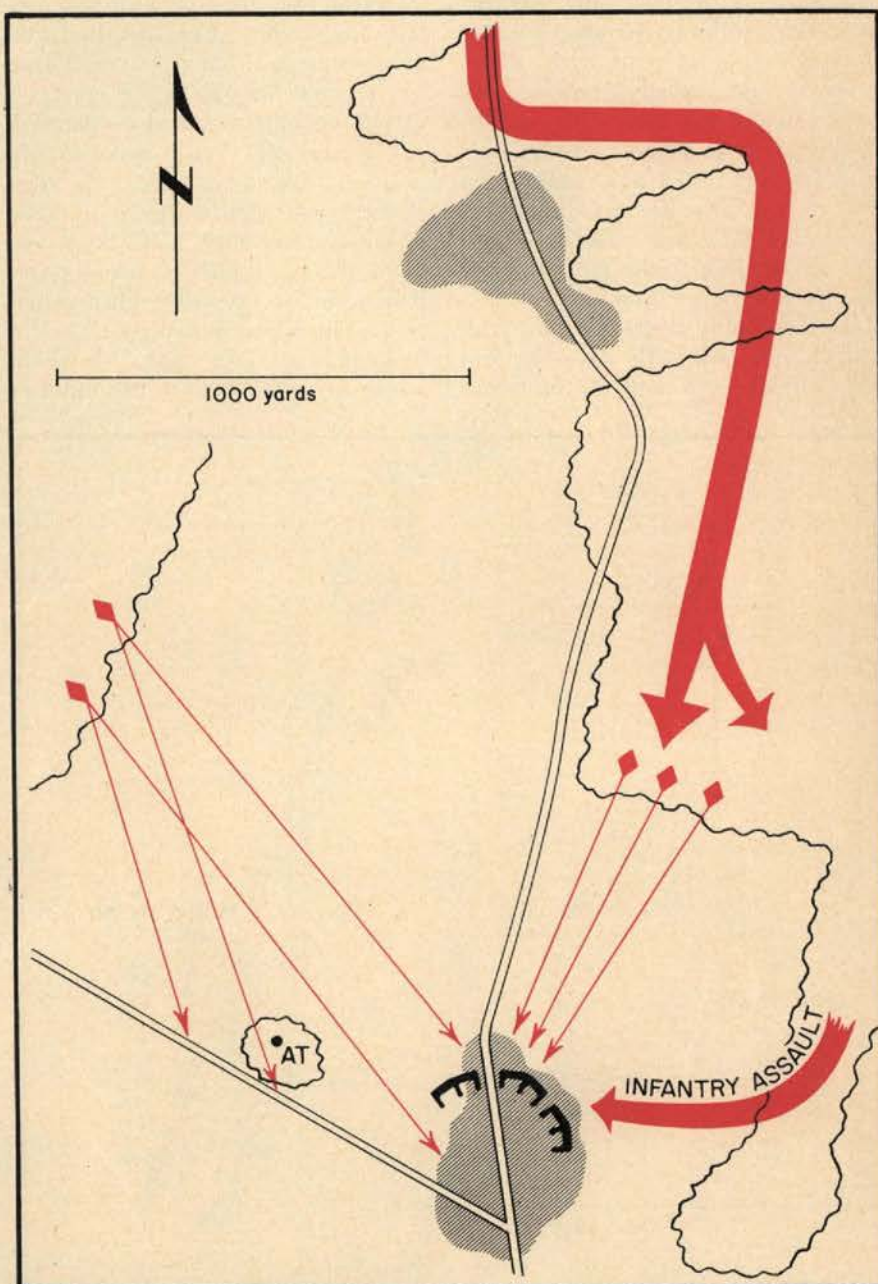


*In the late Fall one of a series of large scale maneuvers took place in Europe. Known as Operation Counterthrust, it included both American and British troops. Here is one view of that maneuver from the platoon and company operating level. It is a story of Allied cooperation in the important area of the Western defense.*

I moved my tank up and knocked it out at 200 yards range. Our infantry-tank attack which followed foiled an attempt by a Blueland tank company to ambush us as we advanced. If we'd been five minutes later they'd have swallowed 3 M-26s and at least one third of the infantry. The old "speed and violence" which they preach at Knox sure paid off there. We made another 2000 yards that day until enemy build-up finally stopped us still 3 kilometers short of our objective for the day, but we'd made 30 kilometers since daybreak and my boys had experienced three types of attack: (1) tanks following infantry (going through woods), (2) tanks supporting infantry by fire and joining for reorganization after assault, and (3) tanks leading infantry.

We pulled back at dusk and were assigned a sector in the Guards perimeter—800 yards of woodline overlooking 1200-1400 yards of open country to the front. The position was ideal because we were tied in with infantry on three sides and had beautiful fields of fire to the front, completely covering the tank approaches. Checking range cards, begging for and receiving a squad of infantry for outposts (tankers cannot spare the men), and getting my gas trucks forward for blackout refueling finished the first day in "enemy" territory.

D-plus-1 started with 3 Company in the lead in trucks and my platoon right behind. After moving three miles, the head of 3 Company was torn up by HE fire coming from a small woods. On my hand signal, the tanks





hit both sides of the road, putting mixed HE and smoke into the woods when so ordered over the 508. When we had started to lay in the fire so the infantry could de-truck and reorganize, I realized that I'd put my boys right out on the "pool table." Try as I might I couldn't find even "road wheel defilade," and there was no vegetation bigger than a turnip anywhere but 1000 yards to the rear. The infantry still had to get back! Another quick prayer to the ghost of George S. and with strong reliance on the WP screening effect, I had my tanks zigzag when moving back out of and into position. This isn't necessary when you are firing from hull defilade and can drop out of sight between positions. With "pool table" terrain, however, your only chance is to shoot 1 or 2 rounds at most, give "driver reverse right, steady, reverse left, steady-stop, move out right, steady, left, driver stop, gunner, smoke," etc., and just that fast. I was thankful for two things. That driver of mine was good, and I'd trained my drivers to put her in reverse the moment they stop in a firing position.

In the middle of this Captain Radcliffe came back with the poop. Enemy infantry and tanks in the woods

—his doughs were now under cover and trucks still in action had gone to the rear. I sent tanks under my platoon sergeant SFC Bondura back to a woodline—still no cover, but at least a little concealment.

Captain Radcliffe and I talked the situation over and he decided to attack on both side of the road, main effort on the right, tanks to follow 100 yards behind the infantry, firing on the objective. After my quickly acquired knowledge of that pool table country, I had no desire to slow my tanks to the speed of a walking man, so I talked him into a Fort Knox "approved solution." Tanks would fire from woods and join infantry when they assaulted with attempt to arrive on the objective with infantry. To his credit, Captain Radcliffe agreed to this, although he could have easily stuck me out in the open.

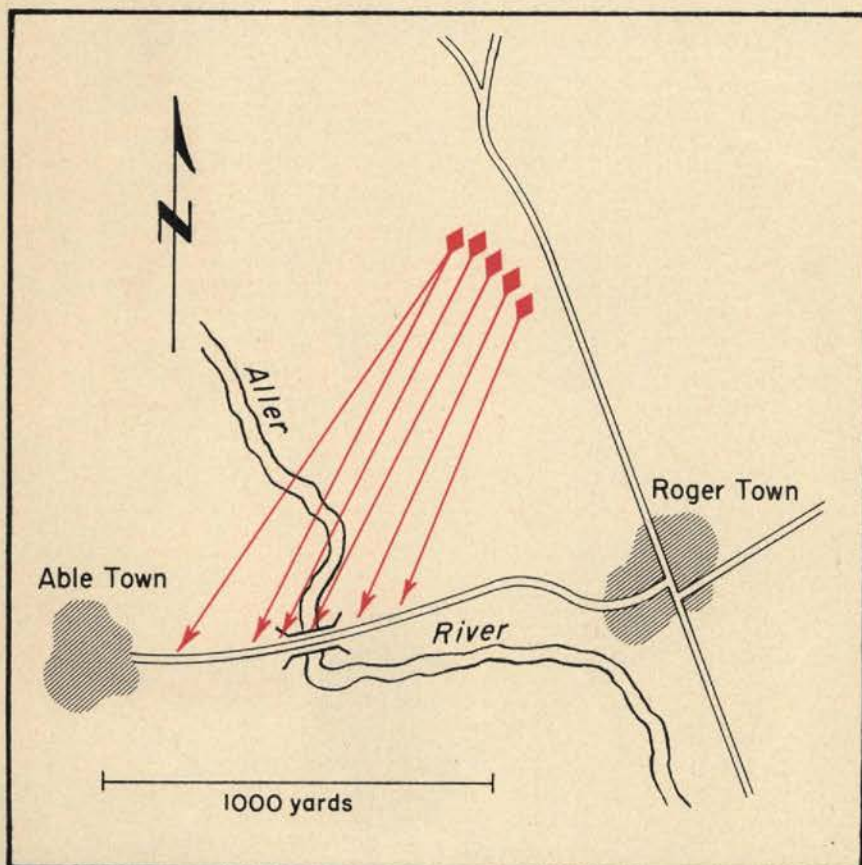
The coordination and cooperation really paid off. With tanks in fire positions 10-15 yards back of the edge of trees, we opened fire as infantry crawled out of their holes to go forward. About 10 minutes later a green flare went up (predetermined signal that infantry had started assault). We took off in an 1800 yard dash which put us in those woods in two minutes

flat. Infantry had just entered the woods, which were only 100 yards deep. So well timed was our assault that the tanks overran two enemy personnel carriers that were timing their withdrawal to the advance of our infantry.

I had covered reorganization in my order back in the firing position, so the tanks were able to find hull defilade positions covering counterattack routes in minimum time. It was a good thing, too, for we'd just completed re-camouflaging about 15 minutes after the assault when four Centurions attacked from our right rear. We had two guns on them when they broke cover and in short order swung another into its alternate position which covered the area. Umpires gave us credit for two Centurions and the others withdrew.

We learned something about camouflaging in that action. Although we spotted the Centurions (they were moving) and they didn't see us (stationary) it was nearly impossible to see their panzers when they stopped. Even while looking right at them and knowing they were there, we had to convince ourselves that they were tanks, not bushes. I remember so well because Colonel Butler made some polite suggestions concerning the camouflage on my tanks. At that point I shamefacedly set about putting this straight as 3 Company moved on into town to clear it of enemy. I was hoping to give my boys some experience in village fighting with the tank-infantry team, but Colonel Butler was afraid to "risk" us in town with that good tank country off to the right. So we sat as a sort of rear guard and reserve while the infantry made things hot in town. Needless to say we used the time for refueling, camouflage, maintenance, CAMOUFLAGE, restoring OVM, chow, shaving and CAMOUFLAGE.

When 3 Company cleared town, Captain Radcliffe came back to tell me we would organize just forward of town for the night. A quick check with Colonel Butler gave me the information that I'd have to split the platoon again—one section with each rifle company for the defensive perimeter that night. Then followed two hours of reconnoitering for positions in each of the two company areas which would cover the sectors, yet place my 2d section in such a manner





that I could communicate with Sergeant Bondura.

Captain Radcliffe was good enough to lend me his DR (dispatch rider) with motorcycle, otherwise I never would have accomplished the job without running tanks all over Northern Germany. By nightfall I could have torn limb from limb the character who left a jeep off the Tank Platoon TO&E. When the DR, Sergeant Thomas, and I finished we went back to the platoon. I gave the tank commanders a quick order and we were off with the DR leading the way through town. I pulled the first section off to the left and Sergeant Thomas led the second section to the 2 Company sector. When we got in position I checked Bondura's positions with the help of the DR, established communications, and coordinated with Major Rasch, 2 Company CO.

The only difference in the nightly routine was a conference with a lieutenant from the Royal Engineers. In crossing a bridge marked 7 tons with the three 1st section tanks, I noticed that the bridge sank six inches. I asked the Engineer to check it, since the other two tanks would have to cross it in the morning. An hour later he reported that the damage was slight and he figured the bridge at 24 tons. I asked him if he thought my tanks, which were not point loads and tipped the scales at a scant 46 tons, could make it with a "risk crossing." Unfamiliar with that term he finally agreed when I described the procedure—3MPH, one vehicle at a time, no stopping or turning.

After an uneventful night I moved to the bridge and radioed the 2d section across. The tanks made it all right, driving the piers another six inches into the mud. My men claimed that would just make the bridge stronger! The Engineer and his CO rechecked the bridge with the result that it was classed as a 12 tonner. We were told it would be unsafe to cross again. Those bridge cards are fine, as are military postings on bridges, but if possible an Engineer is the man to see. Though unfamiliar with our terminology and methods, the lieutenant was still able to call that one down to the last tank that could safely cross.

We coiled up off the road and waited for our place in column in

compliance with the order issued at midnight. We were behind Command Group again and clicked off 6 miles in a half hour. When the leading truckborne infantry hit a blown bridge, they called me to see if I could get around. In five minutes we found a road only 300 yards out of the way which by-passed the bridge. Within 10 minutes the column was moving again. Never put up an obstacle that can be readily by-passed, especially if it's not covered by fire.

One of the infantry companies went on to clear Roger town and the column waited for the outcome. I

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The art of war is subjected to many modifications by industrial and scientific progress. But one thing does not change, the heart of man. In the last analysis, success in battle is a matter of morale. In all matters which pertain to an army, organization, discipline and tactics, the human heart in the supreme moment of battle is the basic factor.—*Du Picq.*

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coiled my platoon off the road and joined Colonel Butler for a quick "Order Group" (Operation Order). I was to move into a position to fire on the bridge over the Aller River which was our main objective. Our mission—to prevent the enemy from blowing it as they were driven out of town. I got in position and it was ideal. We were still 1000 yards north of forward elements in Roger Town which was another kilometer east of the bridge. We were behind a small stream with hull defilade and trees to the front provided concealment. We started to fire on both abutments and 300 yards up the road on both sides. With our range of 800 yards, no one would have been able to blow that bridge from 0840 hours on. We really thought we had the war won until we learned that the bridge had been blown the night before at 0230. Nevertheless it had been an excellent opportunity to train the platoon in the infantry-tank team in attack of a bridge.

Later in the day we got a chance to support a river crossing. The Grenadiers had managed to cross on a fishing schooner and were attempting to seize Able Town on the far shore, which contained a major crossroad. I switched my loaned-out 300 radio to Major Rasch who was in command of the attack force across the river, and he gave me targets and times over that set. We were in positions in Roger Town with alternate positions for all tanks. Although we got credit for 7-9 Centurions, the attack was not successful due to an enemy tank battalion and infantry battalion in the town.

General Eisenhower drove up just as the attack was launched and watched our support fire and infantry jump off. Our communications with the infantry worked fine. Although their radio procedure was a little different from ours and they were working with a foreign set, we were able to understand messages and get on target in minimum time. I guess a tank platoon and infantry battalion just wasn't enough in this case regardless of the cooperation and communication.

We pulled back from our forward positions and were setting up a roadblock when the word came to rejoin our parent company. Under cover of darkness we rejoined just in time to attack on another front and seize a crossing of the same river five miles West before midnight.

We had a busy three days, but we'd learned several things—(1) in an outfit like ours the platoon leader needs a jeep, and bad. Lack of one costs us time and communication and vehicular casualties; (2) much valuable practical work with varying terrain, situations, etc., convinced us that they may "throw the book away" when combat starts, but they better have it memorized when they do. Not that we, or any other unit, can use one given solution for each given problem, but the Knox poop is a fine guide to go by; (3) in the tank-infantry-artillery team, teamwork counts; (4) adequate communications are made up of equal parts of proper procedure, constant maintenance, prearranged plans and ingenuity.

Next time they want someone to work with infantry, especially British infantry, we won't hide, we'll volunteer.



# ARMOR NOTES

## New Heavy Tank

A pilot model of a heavy tank of entirely new design has been completed in the Chrysler Delaware Tank Plant in less than a year from the date that the company took on this defense assignment and started to build the plant.

The first Chrysler-assembled pilot model of the new heavy tank, designed by Army Ordnance and Chrysler Corporation, was completed on November 19th, less than eleven months from the date the tank-building contract was announced and only ten months after ground was broken for construction of the tank plant.

While details of the tank are still under security restrictions, Army Ordnance officials have declared that the new heavy tank will outslug any land-fighting machine ever built.

Although the exact date the tank will go into volume production cannot be revealed at this time, Mr. Robert Keller, general manager of the plant, said that plant construction is more than a month ahead of schedule.

"Machine tools are more difficult to get but every effort is being made to meet all schedules, and we expect to do so."

All major construction on the 900,000 square foot main manufacturing building, boiler plant, and test track has been completed and these facilities have already begun to be used. Well on the way to completion are the office building, paint shop and repair shop.

Chrysler employment at the Delaware

Tank Plant now totals approximately 650 workers and will reach approximately 3,000 when contemplated schedules are reached.

The company's current commitments in the tank program also include an assignment to design a medium tank which Chrysler will build in this plant, and to assist Ordnance in the development of the new heavy tank.

Chrysler also has an assignment to build tank engines in the Michoud Ordnance Plant in New Orleans. The company has now completed its renovation of the plant, used in World War II for aircraft production, and has started to install machinery and equipment for production of the tank engines. Current Chrysler employment in the New Orleans plant is 800 workers and will reach an estimated 6,000 when contemplated schedules are reached.



## Army Ordnance Steel Plant In Indiana To Produce Tank Hulls and Turrets

A contract for operation of the government-owned Cast Armor Plant at East Chicago, Indiana, has been awarded to American Steel Foundries of Chicago, Illinois, the Department of the Army announced recently.

The single contract, running into millions of dollars, covers both reactivation of the plant and production there of tank hulls and turrets. The Army Ordnance Corps awarded the contract for

operation of the plant, one of the largest steel foundries in the country.

Conditioning of the plant has been under way for several months. Production, now in its initial stages, is expected to reach a peak next fall. At present approximately 2,400 persons are employed at the plant. Employment is expected to reach about 6,000.

The Cast Armor Plant was built and put in operation during World War II at a cost of \$26,000,000, about half of which went for specially designed equipment. Output of the plant totalled more than 70,000 tons of tested heavy-duty armor castings, chiefly tank turrets.

The plant area consists of approximately 90 acres located on the Indiana Harbor Canal, about 30 acres of which are under roof. Since the end of World War II it has been retained by the government on a standby basis and used partially for storage of surplus industrial equipment.



## 16th Armored Division Association

A 16th Armored Division Association has recently been organized. Although one of the last divisions to form an association, keen interest has been aroused and the membership list is booming. One of the first actions taken by the temporary board of governors was the subscription of \$100.00 for the division plaque on the monument to Armored Units of WWII being erected at Ft. Knox, Ky. A reunion is planned in May or June. All former members of the division are urged to record their present address with: C. H. Noble, 828 Ivy Lane, San Antonio 9, Texas.



## Reserve Field Training To Stress Individual, Small Unit Readiness

Individual and small unit training will be emphasized in the Army Organized Reserve Corps summer training program for 1952 under instructions issued by General Mark W. Clark, Chief of Army Field Forces.

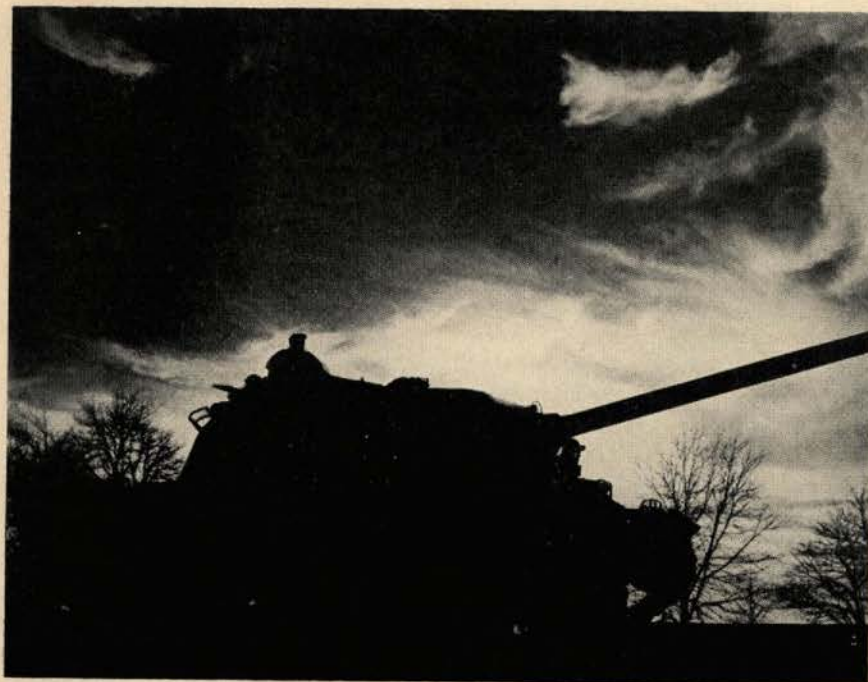
In their second year of mandatory field training, the bulk of Army Reserve troop units will go into the field for 15-day periods between May 1 and September 15, 1952, at headquarters, posts, camps and stations throughout the United States.

In addition to stress on training of the individual and efficient operation of the company-size unit, the Army Field Forces program calls for close coordination in the training of Reserves with Regular Army and National Guard units.



## Army Training Incorporates Employment of Atomic Weapons

The subject of the tactical employment of atomic missiles has been incorporated in all phases of Army train-



Sundown for the enemy! With details blacked out against the setting sun to safeguard military security, the Armed Services have just released the first picture of the Army's newest, biggest, hardest punching tank, the T-43. Ordnance officials say it will "outslug any land fighting machine ever built." It is being built at the Chrysler Delaware Tank Plant. Date of volume construction is not released.



## TEAMWORK FOR NATIONAL DEFENSE



Two thousand suppliers furnish materials and parts to help Cadillac build the T41E1 light tank in Cleveland. 380 suppliers in 22 states furnish the materials and parts listed in the above chart, reproduced through courtesy of Cadillac.

ing, General Mark W. Clark, Chief of Army Field Forces, announced recently.

As Army training keeps abreast of changes in weapons capabilities, all Army personnel, from the individual rifleman to field army staffs, are being indoctrinated in the offensive and defensive tactics of atomic warfare.

Atomic warfare concepts have been integrated with standard training programs and staff functions.

The Army Service Schools have incorporated atomic warfare subjects in their curricula. To assist troop commanders in individual and unit training, atomic warfare doctrine has been incorporated in field manuals, training circulars, and pamphlets.

In major field exercises and maneuvers, maximum consideration is being given to the training of field forces of the Army in the offensive and defensive

employment of atomic weapons, with particular attention being paid to the following factors.

1. Individual and unit training in atomic warfare.
2. Combat intelligence required to identify remunerative targets for atomic weapons.
3. Atomic weapon delivery methods.

Using its maneuvers as an opportunity to study atomic capabilities as well as a means of training troops, the Army will continually examine its current doctrine and procedures with an eye to making appropriate organization, training and logistical revisions as required.

Army atomic weapons tactics will be employed down to include division level in Exercise SNOW FALL, the joint Army-Air Force maneuver scheduled for

February 9-15, 1952, at Camp Drum, New York, and in joint Army-Air Force Exercise LONG HORN, scheduled for March-April, 1952 in Texas.

Atomic weapons simulation in these maneuvers will be as realistic as possible short of actual employment. Consideration of atomic weapons capabilities will be a normal part of staff functioning. Troop commanders will test techniques and procedures required to employ atomic missiles offensively, and will take active measures to reduce vulnerability to atomic attack. The over-all effect of the theoretical use of atomic weapons in the maneuvers will be carefully checked and analyzed.

The present scale of Army training in atomic weapons tactics results from continuing staff studies and field experiments phased to the development of the weapons themselves.



*The question of German rearmament and her position in Europe, coupled with closer identification of the civil and military areas in America as a result of her position of world responsibility, makes this story of recent experience in Germany's history of interest to all*

## Reichswehr and Republic

by LIEUTENANT O. W. TRABER, JR.

ONE of the problems raised by the current issue of rearmament in Germany concerns the rise of militarism in that country. More than any other in this world, the German nation has been commonly cited as *the* illustration of the dangers of a military orientation. Is this identification valid? A tracing of the patterns of purpose and method of the German military leaders during the period of the Weimar Republic offers some interesting background.

This question has particular relevance to the problems of our own country today. There is a similarity of circumstances between the civil-military situation in the United States today and in the German states of past history. This similarity rests in the continual identification of the military forces with the very existence of the nation in the face of external dangers. The military forces were critical to Germany's ability to form a national state. Germany is located quite literally on the crossroads of Europe. Migrating waves of people, from the East and the West, have crossed her territory. Conquering armies have used these same routes, preceding or accompanying these migratory groups. Strong land armies had to be consolidated under a central authority before the influence of a central government could be extended over the German principalities. To-

day, the position of the United States as a leader of the free world in its fight against communism seems to be increasingly dependent upon military force. Perhaps from German experience we can observe facets of civil-military relations valuable to us in our new responsibilities.

The example chosen is especially relevant for three reasons. In the first place, Germany is essentially a Western nation. True, she has not fully experienced all the chapters of the development of our traditions; but in many ways she is more like the Anglo-Saxon states than is France. Secondly, the government of Germany during the period covered by this paper was a democracy in the sense in which we understand the word. The Weimar Republic has been aptly described as the "full flower of Wilsonian liberalism." It was a liberal government, though differing from others in many respects, such as not having experienced a real fight for democracy and lack of practice in popular participation. An examination of these differences is beyond the scope of this paper. The third relevant factor is that the period covered is recent enough to see the army as a modern, highly rationalized organization. Elements of personal leadership were not nearly so essential to this *Reichswehr* as during earlier times. This army was as calculating and coolly efficient, if not more so, than any other before or since. The concept of total war, with all that phrase implies, was at the very base of their plans for the future.

Accepting the relevance of these studies, this article will be framed by

the following questions: First, what were the motives of the leading figures of the *Reichswehr* prompting their actions during this period? What did they see as the role of the army in stabilizing the German state, educating her young men, or influencing the politics of the government? Also, what were the attitudes of these leaders toward the republican form of their government?

The second question concerns the methods employed by these men to secure their aims. Were these attempts through means we would accept as proper, or ethical? Or were they the ruthless actions of power seekers, scorning the idea of a higher civil authority?

### II

The history of the conditions surrounding the army during the time of the Republic generally follows the roles of four men. These four are each a complex of personal traits; they are not stereotypes, but their traits do combine in a striking way to illustrate reasonable conjectures concerning German military leaders as formed in American minds.

In Germany of late 1918, the conditions of the government fitted the word "chaotic" very well. After the fall of royal authority, and an actual, if not bloody, revolution, with the catastrophic defeat of the armed forces, little better would be reasonable to expect. Under the terms of the armistice in November 1918, the *Wehrmacht* moved back across the Rhine in superb order. But upon reaching their home areas, the mili-

Lieutenant O. W. Traber, Jr., is a student at Harvard University where he is studying for a Ph.D. in Political Economy and Government. This article was prepared as a part of the course.



tary formations largely disintegrated. There was little left of an effective military force. A "Free Corps" of militant irregulars sprang up to carry the fight to the Poles, menacing Germany from the East, and the Bolshevik Revolutionary Guards attempting to seize power throughout the nation. This Free Corps was encouraged and loosely directed by Noske, the minister for military affairs. These formations were oriented to the right, at least to the right of the Reds. This need not have been intentional, for the trained military skills at this time were the virtual monopoly of the right wing sympathizers.

The man who directed this withdrawal of the German Army was General Wilhelm Groener. He had succeeded General Ludendorff as First Quartermaster General (Chief of Staff) of the Army. He moved his headquarters to Kassel, where it immediately set to work planning the new *Reichswehr*. Groener was a most interesting personality. He was one of the few real liberals in the history of the German armed forces. It was he who had made the army recommendation favoring an armistice, thereby drawing upon himself the censure that should have been Hindenburg's, no longer effective as commander-in-chief. He had also favored abdication of the Kaiser as the preferred alternative to opposition to the revolution sweeping the country. Following this, he had the famous telephone conversation with the leader of the Majority Social Democrats, Friedrich Ebert, forming an alliance with Ebert's interim government. In this he exchanged the support of the high command for the government's promise to suppress the bolsheviks, then attempting to seize power through their Workers' and Soldiers' Councils. The assent by Ebert to the terms of this agreement gave the *Reichswehr* an autonomy from the start of the Weimar Republic. The nature of the agreement fitted in with Groener's conviction that the army had the right to define the best interests of the state and act accordingly. In June 1919, Groener saw the futility of further warfare and argued strongly for acceptance of Versailles' terms by the government. The result to him of this series of recommendations was a vulnerability to severe abuse from many quarters, especially within the

army. He was called an opportunist, a traitor to the Kaiser and deserter of the army, accusations which were to shadow him during the rest of his life.

The policies advocated by Wilhelm Groener were motivated primarily by Reason of State. He saw this as far more critical than the feudal ideas held by the majority of his officers—ideas of loyalty to the Kaiser, and professional honor. The effect of this concept can easily be seen in the points previously listed. Above all he was determined to save the unity of the state, with its unity and stability protected by the army. Part of this policy of unity was the idea that the army assumed a position above the squabbles of parties and factions. The army would be a magnificent rock about which the turbulent seas of politics would tumble. Another facet of this unity was seen in his strong attempt to retain universal military service. Such universal service would instill in the new generation a personal discipline, physical and moral health, and above all, the idea of selfless service to the German state. To secure this concession, he sought to instruct the delegate of the Foreign Office to the peace talks, Count Brockdorf-Rantzau, in the tactics to be utilized. In this move he was quite unsuccessful; the Allies were adamant.

After seeing the majority of his policies accepted by the German government, General Groener retired from the army. This was not, however, the end of his public career. Later he was to perform capably as Minister of State Railways, a job similar to the one he did in uniform during the war. It is interesting to note the names of two of the officers on his staff when he retired, von Schleicher and Hammerstein, two more of the principal characters of this sketch. This staff was busy preparing the plans for the new *Reichswehr*, plans which were to be put to such good use by the next important figure, General Hans von Seeckt. A primary vision behind these plans was that of total war. This idea fitted in neatly with the well known "stab in the back" theory to be advanced later. Realization of total war brought with it the need for popular support for the armed forces, both to maintain the *esprit* of conscript formations, and, more earthily, to allow easier passage

of the huge budgets required by modern mechanization. We shall see later how strongly this latter need impressed one of the figures to be discussed.

The successor to General Groener was General Hans von Seeckt. He is rightly acclaimed as the builder of this magnificent fighting machine. The army that he fitted to the frame of the Versailles treaty was notable for its high morale and superb technical skill. It was truly an army of leaders. The indirect effect of the Treaty of Versailles is unmistakable in the quality and composition of this force. The limit of 100,000 men meant that none but top quality soldiers need be accepted. This quality was aided by the uncertain conditions on the civil front during this period. Also, the matériel restrictions imposed at Versailles aided a swing away from the tactics of Ludendorff to a better appreciation of the inherent capabilities of infantry. Finally, limits on size and matériel avoided civil-military friction over a large defense budget.

Another facet of this limitation was the collaboration with Russia, undertaken soon after the end of the war. This collaboration reflected both the technical limitations of Versailles and the belief of many Germans that an eastern orientation would be more beneficial to the state than one directed toward the West. Many military observers were impressed by the inherent strength of Russia's spaces and manpower, the danger of her nearness, and the complementary nature of German industry and Russian resources. Von Seeckt considered the politics of the Reds as no more important than those of the Weimar Coalition when placed alongside the higher mission of a strong military machine. Russia was an area in which the forbidden tank men and pilots could be trained, and that was the critical consideration.

The implications of Reason of State took a somewhat different direction with von Seeckt than they did with Groener. He saw this concept as demanding as strong an army as possible to defend the Fatherland. This meant technical skill and undivided loyalties. Risk of internal dissension precluded military resistance to the Kapp Putsch of 1920. Technical skill required the Russian collaboration, but all of the relations between governments re-



quired by this move were handled by the War Ministry to maintain internal and external secrecy; this would avoid arousing political parties favoring adherence to Versailles, nor would the Allies be able to exert as much pressure on the Foreign Office on an international matter that the latter didn't handle. Thus even this "political" activity was made out to be purely military, emphasizing even more the independence of the *Reichswehr*. Von Seeckt saw political parties as unstable, divisive influences, to be avoided by his officers. Political isolation was maintained, not simply political neutrality. Service to the state, as physically represented in the person of their military leader, was the focus of the loyalties of these subordinates. This political isolation was to cause serious difficulties at a later period because of the naïve reactions of junior officers to the absurd Nazi promises. They were unable to see the implications of the Nazi claims to super-patriotism and desire for a larger war potential. They missed completely the direction of Nazi dreams and aspirations, falling spell-bound before the demagogues of the Nazi movement.

In 1928, the long-time *Reichswehr* minister, Otto Gessler, resigned in the face of a scandal over naval accounts, and Groener was called from retirement to take his place. The considerations of this choice merit discussion. Groener's being a professional soldier commended him strongly to the President of the Republic, Hindenburg, serving to indicate the degree of influence of the old Marshal in political affairs even at this early date. Secondly, the Social Democrats seemed likely to come to power after approaching elections, and a minister was wanted who could effectively plead with them for heavy new-construction funds. This estimate proved well founded, for the Social Democrats formed the new cabinet, and remembering Groener's liberalism and his actions in 1918, retained him in office. These circumstances probably gave Groener an unduly high estimate of his personal influence, especially upon Hindenburg and the high command, accounting for his later inability to foresee trouble brewing. The policies followed during his tenure seem to be very much the same as those mentioned before. His opposi-

tion to Hitler and his private army was continual and sincere, though delay over plans to disband the latter made effective action more dangerous. The postponement was caused by Groener's strong desire to eliminate the breeding grounds for such an organization by adopting universal military service to properly indoctrinate the young men, and formation of a large sports organization to take most of the unemployed youth "off the streets." When he was obliged to act by increased Nazi disorders (he had also become minister of the interior) he found the army and the President no longer in sympathy with his program, and was forced out of office.

When Groener became *Reichswehr* minister, he immediately installed his protégé, Kurt von Schleicher, in the job of political liaison officer with the army, the other ministries and the parties. Schleicher had a personal authority as well as ideas of his own. He was a former messmate of Hindenburg's son, Oskar. As the President had grown older, the influence of a circle of intimates upon his decisions became more pronounced; through this son, Schleicher was a member of the circle. It is one of the tragedies of the Republic that as the President became mentally weaker, the role of his office in the conduct of government grew so essential.

Schleicher was undoubtedly the most politically minded general in the *Reichswehr*. He and Groener agreed upon the desirability of Bruening as Chancellor some months before this took place, though their influence on this choice is unknown. Schleicher also conspired with others to attain the removal of the leader of the powerful and arch-reactionary German National Party in order to form a more dynamic right-wing faction. Later this idea developed into a plan to reorient the political base of the government away from the old parties and toward interest groups such as religious organizations and trade unions. It was on the issue of dissolution of Hitler's *Sturm Abteilung* that Schleicher split with his chief. His reasons for this are not clear, for he was not a Nazi, and later tried to rally the army against this danger after Hitler became Chancellor.

With the fall of Groener, and the Bruening Cabinet, Schleicher reluctantly assumed the post of *Reichswehr*

minister. After von Papen, Schleicher was Chancellor for two months before being dismissed by the President in favor of Hitler. A year later, he was murdered by the Nazis incidental to their purge of the S. A. leaders.

Schleicher also felt the guiding hand of Reason of State. This was the view he shared with Groener in seeing Bruening as capable of forming a cabinet less shaken by factional squabbles. But to him the calls of this concept were unique, for he seemed to emphasize above all the need for strong popular support for the *Reichswehr*. Strong popular support meant a strong popular government. Undoubtedly he supported Groener's alliance with the Social Democrats in 1918. As the leading social forces in Germany moved to the right, Schleicher moved with them, probably without realizing the true nature of the Nazis. This would explain his support of Bruening as the man most likely to form a strong government, his attempts to build a strong right wing party, and his initial willingness to tolerate the Nazis. His change of heart may have come with a realization that the Nazis' ideas of popular support were rather radical to say the least, including a revision of the role of the army that could not be made compatible with his long-time views.

General Hammerstein is of importance to this paper not because he was a key figure in the political activities of the *Reichswehr* during this time, but because he was so far from being politically inclined. His position was the same as that held by Groener and von Seeckt at earlier dates: chief of staff, actually military commander of the *Wehrmacht*. He was a capable, courageous military leader. His selection was carefully made by Groener, who passed over Schleicher in the choice. Illustrative of his political courage are instances such as his defense of Schleicher's name after the latter's murder, and his presence at Groener's funeral in 1936 after the Nazis had denied military honors. Yet he failed to raise any serious obstacle to the overwhelming of the Republic, and then the army, by the Nazis. His attitude was apparently one of complete subordination in political matters to the judgment of the political leader of the *Reichswehr*. Groener described this



aply when he wrote that this "non-political soldier follows his friend Schleicher like a well-trained hound." Fighting was his business, political affairs were Schleicher's. Building and directing a strong army was his task as the military chief; he would defer to anything the minister said about political matters. The direct weakness of this attitude—perhaps inherited from that of von Seeckt—was that this military chief did not defer to Schleicher as a member of a higher political authority, but to Schleicher as a political authority himself. The isolation of von Seeckt was gone; only the political artlessness remained. The root of this difficulty is deeper, for the outward form of deference of the military to top civilian control is accepted as basic to western democratic thought. The question is whether such an arrangement is as workable under conditions of a basic division of ideas concerning the nature of the civilian government itself and an absence of any tradition of civilian political supremacy. Though the first condition is in a sense characteristic of France, the call to defend the Republic has had immense popular appeal when the chips were down. In a much more direct way, both of these conditions plagued the German Republic. Not only was there a considerable sentiment of disgust among the army officers over republican politics, developing into a yearning for a more stable, authoritarian form, but there was an even more basic lack of appreciation of the nature of constitutional government itself. It is important that, in civilian-military relations, the generals realize that the war minister knows and obeys the law, and equally important that the reverse be true. If it did happen that an American Defense Secretary required an unconstitutional act of his military chief, it does not follow that the general would obey. This certainly could not have been said for General Hammerstein.

### III

How does this brief narrative serve to clarify the questions presented in the introductory section? First, let us summarize the motives of the military leaders. The predominant motive of all seemed to be Reason of State, though this took form in a number of different concrete policies. To Wil-

helm Groener, it required that a unity be attained by the state. By placing the army above the reach of political differences, it was to serve as a stabilizing influence, always ready to restrain the excesses of the various factions. The good of the state dictated the less abstract policies of capitulation to the Allies in the face of a hopeless military situation, and of avoidance of force in countering the popular revolution of 1918. Von Seeckt saw service to the state as the concept around which to rally the loyalties of his men. Reason of State meant to him personally the strengthening of the military forces of the nation by all practicable means, including political isolation and collaboration with the Russians. Schleicher showed his bias by emphasizing the aspect of popular support for the *Reichswehr* required by the advent of total war. The strongest elements of the social structure were the places to look for this popular support. Thus he followed the trend of the voters from the leftist Social Democrats in 1918 to the radical right Nazis in 1932. Finally there is the non-political soldier Hammerstein, who seemed to feel that the determination of this Reason of State was better left out of the hands of the military, not a really proper topic of discussion among true members of his class of experts.

It will be useful at this point to classify the methods utilized in pursuit of the implementation of these aims. The first method was by direct contact with the other officials of the government, such as the Groener-Ebert and Groener-Brockdorff-Rantzau incidents. This capitalized on the native respect for an expert as well as the traditional deference to the *Reichswehr* in defense matters. In the run of such relations, the normal sources of friction between the civil-military officials over the budget were settled by the limits of Versailles. A second source of external influence grew from the position of the President of the Republic. This position was never that of a mere figurehead, and when it was filled by the senior soldier of the nation, the relations between the *Reichswehr* and the President became quite close. This relationship was especially influential when the government-by-emergency-powers emerged, for then the Chancellor depended for his tenure upon

the toleration of the President. Under a less important class would come the influence exerted by the *Reichswehr* upon the choice of cabinets, with military pressure favoring the strongest coalition regardless of domestic policies, except those harming the military. A fourth influence, latent and usually unintentional, was created by the hesitancy on the part of the government to ask the *Reichswehr* to take action against disorderly rightist groups. The most serious failure by the army in this respect occurred during the time of the Beer Hall *Putsch* in 1923. The federal commissioner, equipped with summary powers, failed to comply with orders from Berlin that were opposed by the rightist Bavarian government. This man was General von Lossow, commanding the federal troops in Bavaria; the orders were to suppress Hitler's newspaper. The impasse only came to a solution when the monarchist rightists in the government realized that the monarch favored by rightist Hitler was neither William II nor Crown Prince, but Adolf. Similarly, von Seeckt had opposed armed resistance to the rightist Kapp *Putsch* in 1920, though for much more valid reasons than Lossow advanced three years later.

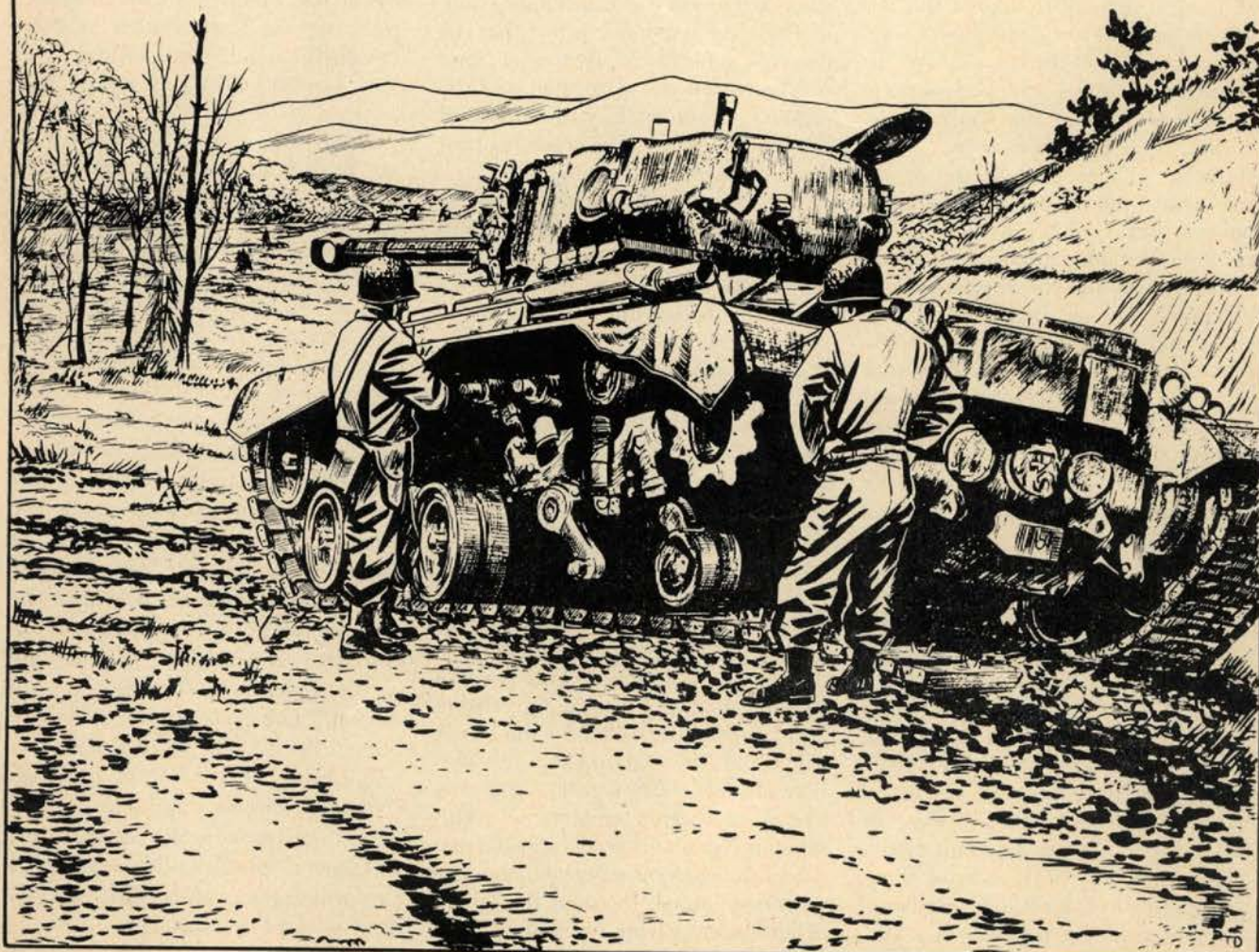
The positions of each of these military leaders had fundamental weaknesses. Groener's emphasis on the abstract idea of the German state allowed his followers to avoid a commitment to the more concrete form of the government of that state. Von Seeckt was even more aloof toward the political affairs of the state, inducing an indifference to political affairs so well emphasized later by Hammerstein. Finally, Schleicher's attempts to gain mass popular support for the *Reichswehr* served largely to discredit the constitution and the government in the eyes of the army. None of these men seemed to desire to control the affairs of state, yet the policies of all of them contributed to the inability of the government to exercise such control. The picture may well have been different had more sincere "republicanism" been felt in the high command, ministry and officer corps. These leaders were not likely to say, as General Bradley did recently, "I am loyal to my country, but I am also loyal to the Constitution."



# HOW WOULD YOU DO IT?

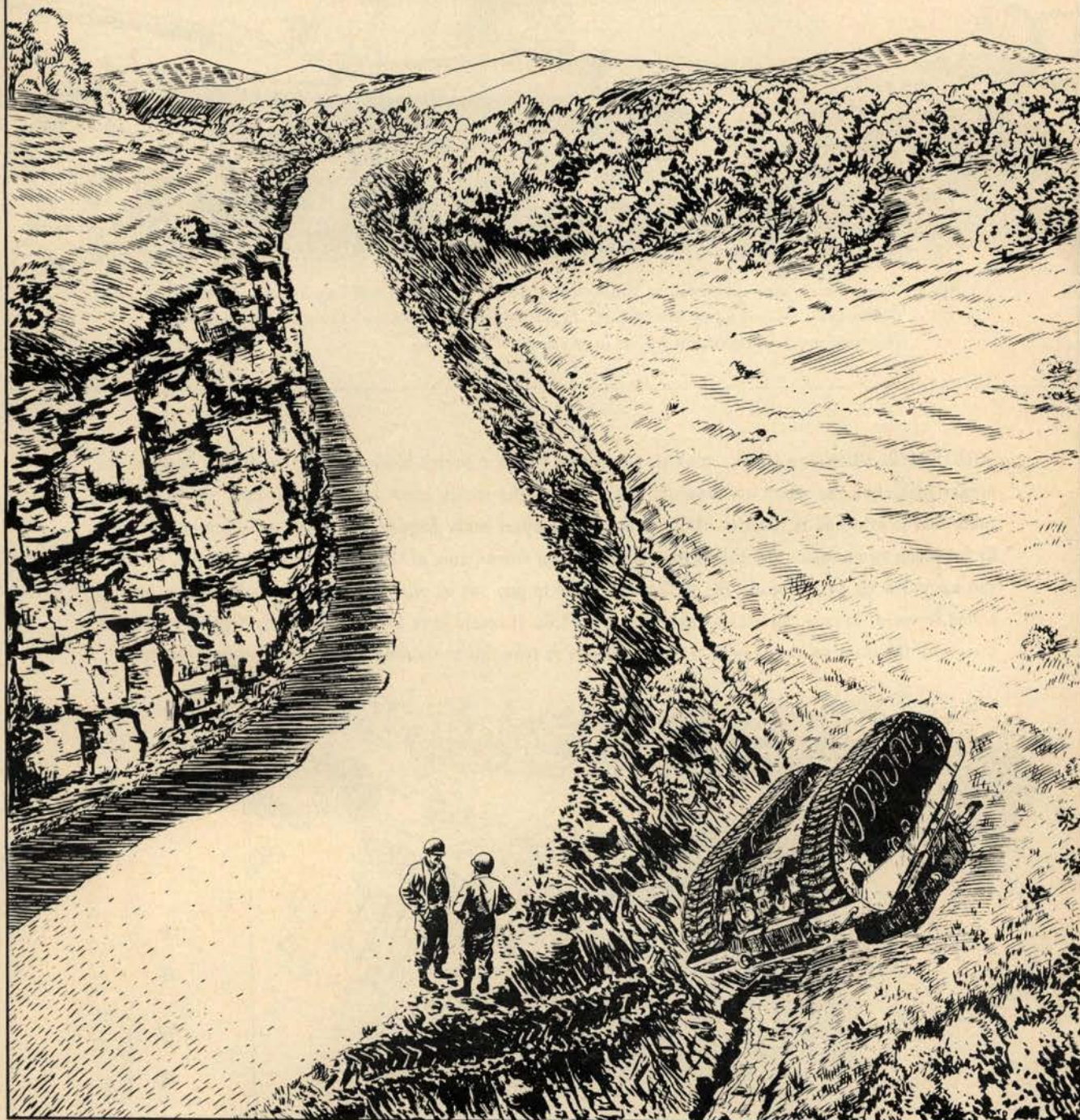
AN ARMORED SCHOOL PRESENTATION    AUTHOR: CAPT CHARLES G AMES    ARTIST: PFC WILLIAM T DICKEY

**SITUATION 1.** One of your platoon of M-46 tanks is damaged by enemy mines. Damaged are the three rear road wheels, the auxiliary idler, the two rear support rollers, various mounting brackets, and shock absorbers on one side of the tank. The disabled tank must be evacuated to the rear using the minimum number of the remaining platoon tanks. The type of terrain over which the vehicle is to be evacuated has a mixture of soft, muddy, rice paddy and hard road. What would you do to accomplish the evacuation in the best possible way?



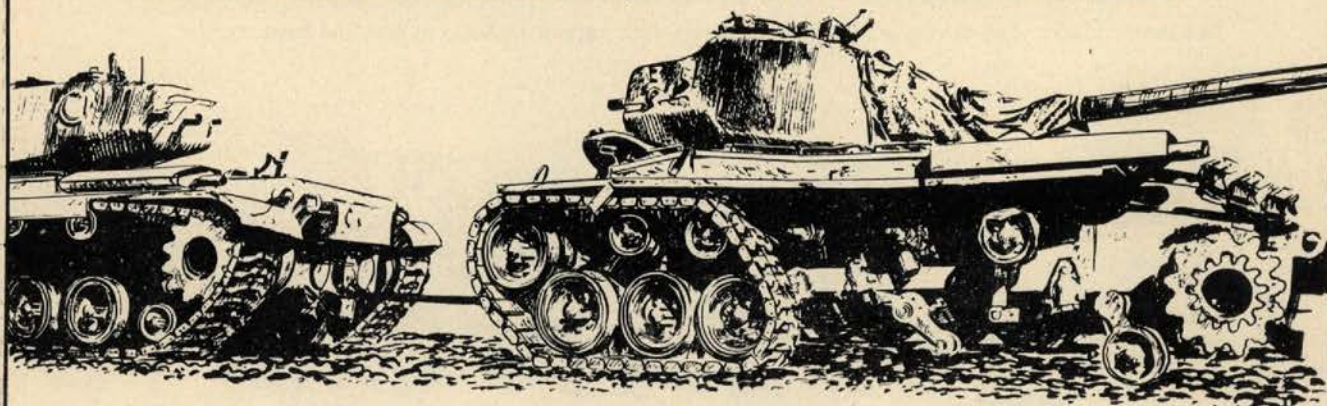


**SITUATION 2.** During a road march one of a platoon of M46 tanks fails to make a turn and upsets on its side just off the shoulder of the road. The road is only 20 feet wide, is bounded on one side by a sheer cliff 50 feet high and on the other side by a 45-degree slope covered with large rocks and trees; it would be impossible to get any of the remaining vehicles off the road. Because of the rough terrain, the disabled tank would have to be on the road before it could be released from any hook-up that righted it. Realizing that it would be impractical to use self recovery, you, as a motor officer, decide to take the M32 recovery vehicle to recover this tank. How would you do it with the least amount of delay? The equipment you have consists of the tow cables and pioneer tools from the platoon tanks, and the M32's own equipment which includes two snatch blocks. You of course also have available such natural facilities as logs and trees.



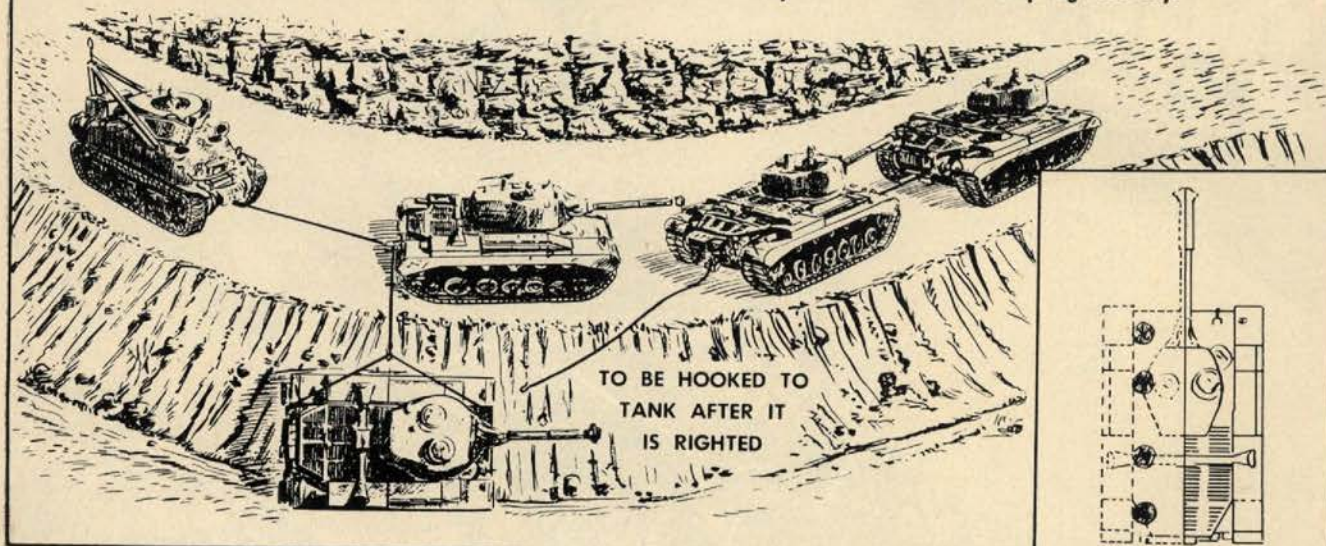


**SOLUTION 1.** To make the track hook-up shown in the solution picture, you have to remove the middle support roller and the damaged road wheel arm and mounting bracket of the fourth road wheel. You also have to break the track at the proper place to hook it up around the remaining road wheels and support rollers. To break a track under combat conditions, where time is a major factor, it has been found practical to remove the center guides and wedge nuts and place a  $\frac{1}{4}$ -pound block of TNT on the open side of each end connector. One  $\frac{1}{4}$ -pound block is usually sufficient to blow off or loosen the end connector so that it can be removed. The TNT will not damage the tracks or pins. The chief advantage of this type of connection lies in the increased flotation furnished by the partial track permitting towing by one tank. Moreover, towing a tank any distance over hard ground on the road wheels alone destroys their rubber tread and renders them unserviceable.



**NOTE:** This problem was submitted to The Armored School for use in training by Major Ralph C. Wardlow, who is S3 of the 64th Hv Tk Bn, 3d Inf Div, in Korea. There the problem is common and is successfully solved in the manner described.

**SOLUTION 2.** Using one platoon tank as an anchor, fasten a snatch block on the rear lifting hook of the anchor tank. Run the winch line from the M32 through the snatch block on the anchor tank and to the tow cable that is attached to the two lifting hooks on the upset tank. Engage the winch and upright the tank. By fastening two or more tow cables together and using one or more of the remaining platoon tanks, the tank can be pulled up on the road. The M32 would have to pay out its winch line slowly as the upset tank is pulled forward. In case the anchor tank slips to the side, it would have to be anchored by digging logs in as shown by the inset on the sketch. It is often better to take this precaution before attempting recovery.





# FROM THESE PAGES

## 60 Years Ago

The importance of shock action of cavalry has of late years been much underrated, and attempts have been made, with more or less success, to lead up to the idea that the charge with the saber is a thing of the past, and that in coming wars cavalry will have to depend for its success on fire action, and not as heretofore on the charge, to produce its effects in battle.

If we admit this to be true the troopers of the future will be nothing more nor less than mounted infantry, no matter what other name they may be given. This is the logical conclusion of abandoning the saber as the principal weapon for cavalry, or making it secondary to the carbine or the revolver; for it is but reasonable to suppose that when possible, arms will be used under those circumstances in which the greatest effect can be derived from them, and as the most ardent advocate of fire action for cavalry will scarce claim that they can be used with anything like the same precision and effect on horseback as on foot, it follows that to use them to the best advantage the men will have to be dismounted; consequently the troops which depend on their fire action will have to fight on foot.

*The Shock Action of Cavalry*

T. J. Y. MASON BLUNT

## 25 Years Ago

Several years ago, a cavalry officer of the Reserve came to Fort Riley and attended the Reserve Class at the Cavalry School. This officer had perhaps always been a good cavalryman, but it is certain that he left Fort Riley strongly imbued with the teachings of the school and enthusiastic as to the possibilities that have been opened for the use of cavalry as a result of the World War. Subsequently, he conceived the idea of a competitive test in "The Combat Leadership of Small Cavalry Units." The January, 1924 issue of the *CAVALRY JOURNAL* announced a prize essay contest to determine the best plan for carrying out this idea.

Fourteen essays were received. The judges were of the opinion that none was in itself complete, yet many contained excellent suggestions which later served as a basis for the plan actually decided upon.

In the fall of 1924, boards were convened at The Cavalry School, and a test was prepared as had been desired. In the spring of 1925, this test was successfully conducted within the 2nd Cavalry. The prize of \$1000.00, donated by the sponsor of the idea, was won by the platoon from Troop F, 2nd Cavalry, Lieutenant J. W. Wofford, commanding.

The object of the test, as announced, was to encourage and test the training, courage, and physical development of men and mounts and the combat efficiency of the units. The test was divided into two phases: the first, an individual test for both officers and men; the second, a test of the unit as a whole. Only rifle troops of the 2nd Cavalry were eligible to compete. These were permitted to enter one platoon each, consisting of two rifle squads, one machine rifle squad, and platoon headquarters. The winner was to be that platoon scoring the highest number of points in both phases combined.

*The 1926 Cavalry Leadership Test for Small Units*  
CAPT. W. B. BRADFORD

## 50 Years Ago

To students of the art of war the introduction of gunpowder as a propelling force in engines of war stands out as the most prominent event in the evolution of that science. It was, indeed, a red-letter day on History's calendar. "The art of war, which until now has found its advantage only in superior numbers, or in the great personal strength and fiery courage of the warrior, became a science; and the most skillful usually carried away the victory from the merely brave."

It would be interesting to trace in detail the development in firearms, beginning with the bombards—made in France as early as 1328—and ending with the most recent productions; but such is quite beyond the scope of this paper. Confining ourselves, therefore, to the last fifty years, it will be remembered that within that period the muzzle-loader has been replaced by the single-shot breech-loader, which in turn has given way to the magazine rifle; and today many of the European powers are considering the advisability of adopting an automatic magazine rifle.

*The Automatic Small Arm*

LT. AUBREY LIPPINCOTT

## 10 Years Ago

*TOTAL WAR is ghastly!* We and our Allies are now confronted by a sinister, unethical enemy of coalition whose Nazi-Fascist-Jap imbued methods of waging warfare are particularly contemptible, repugnant and repulsive to our civilized minds.

The Axis gangster nations have replaced the international *Rules of Land Warfare* by total despicable *RUTHLESSNESS*, under the guise of military audacity and sagacity.

The United States was still pleading for peace in patience and good faith, still offering Japan honorable friendship when the Tokio government, making plans for a surprise attack upon an unsuspecting friendly populace, struck without warning. It indubitably was premeditated! *Thus, the treachery was complete.*

In total war we fortunately know what to anticipate. Since this war apparently is to be total we also know how to wage it. If we must accept the *gauntlet*, we can! It includes the effective employment of every known weapon, sabotage, and subterfuge. Thus far, the use of lethal gas by our enemy has been the only exception—probably through fear of retribution. Yet, unfortunately, its employment still is within the realm of possibility. Its main value obviously is in surprise action. Training in anti-gas measures, therefore, must be stressed continually—for animals as well as for personnel, both military and non-military—and also in its offensive utilization.

We must *always be alert* and remember that when our totalitarian, barbaric enemies realize that ultimate defeat is inevitable, they will resort to *any means* to further their despotic objective. We wisely should acquire a *total war perspective*.

Total war, as we understand it, implies the force of arms, strife, mass-starvation, brutality and national hostility in every detail.

*We shall not forget! ! We cannot forget! !*

*Total War*

EDITORIAL COMMENT



# THE BOOK SECTION

## THE GREATEST AMPHIBIOUS OPERATION IN HISTORY

**CROSS-CHANNEL ATTACK. U. S. Army in World War II; The European Theater of Operations. By Gordon A. Harrison. Government Printing Office, Washington, D. C. \$5.25.**

Reviewed by

J. F. C. FULLER

In this new volume of the *United States Army in World War II* is described with clarity and impartiality what its author rightly acclaims to be "the supreme effort of the Western Allies in Europe." Therefore it is the most important of the European series, an importance enhanced by the fact that, because both Allies are sea powers, should they together become involved in yet another European conflict, the high probability is a repetition of their grand manoeuvre.

The Author



Gordon A. Harrison is a former newspaper reporter, and instructor at Harvard University. Holder of a Ph.D. from Harvard, he served as a combat historian with Third Army during World War II, taking part in five campaigns.

The acorn from out of which it germinated was, that though in 1940 Germany held the initiative on land, she was unable to wrest it from the British on the sea, and because she failed to do so, she was compelled to over-extend her armies. Actually, every new conquest made by her indirectly added to British and later on to American sea power, until by 1944 her garrisons in Western and Southern Europe were so stretched that at no single point on the vast circumference of her initiative could they

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withstand an adequately prepared and determined overseas assault.

The point to note is, that from the moment Germany struck at Russia she automatically placed herself between two fronts: the unconquered British sea front and the to be conquered Russian land front. Russia was not her first front. Russia was her second front, a front altogether subsidiary to the first because strategically the first was directly unapproachable. From the start and increasingly so as the war deepened, the first front pinned down vast numbers of German soldiers who might well have tipped the scales in Russia.

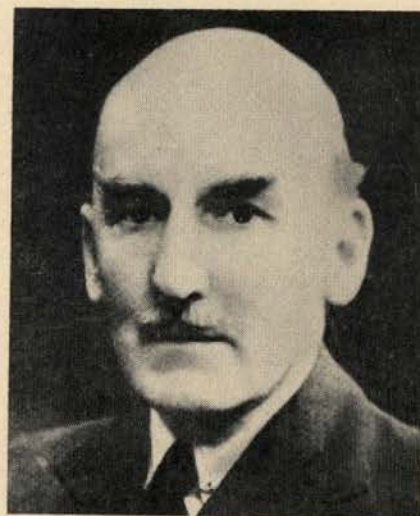
Though inexorably the idea of a cross-Channel invasion was precipitated by the Dunkirk disaster, it was not until the Japanese assault on Pearl Harbor brought the U. S. into the war that it took concrete form at the "Arcadia" Conference, which opened at Washington on the last day of

December, 1941. The decisions arrived at were remarkable, and out of them sprouted the whole course of Western strategy: Germany was to be worn down by bombing, Russia assisted, the northern coast of Africa won, and a return to the continent made across the Mediterranean, either "from Turkey into the Balkans, or by landings in Western Europe," as "the prelude to the final assault on Germany itself." All sprang from "Arcadia," and the rest was, as Mr. Harrison aptly says, "a problem of tailoring an ideal strategy to the changing political and military shape of a war in which the enemy at first had the initiative."

This changing shape was largely governed by events in Russia and North Africa. Were Russia to accept a negotiated peace, the might of Ger-

Continued on page 52

The Reviewer



J. F. C. Fuller, pioneer in the tank field and in the concepts of armored warfare, is one of the leading military analysts of the day. He is the author of many books, including *Armored Warfare* and *The Second World War*.

**ARMOR—January-February, 1952**



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## THIRD ARMY FROM THE MOSELLE TO THE SIEGFRIED LINE

**THE LORRAINE CAMPAIGN. U.S. Army in World War II; The European Theater of Operations. By Hugh M. Cole. Government Printing Office. Washington, D. C. \$10.00.**

Reviewed by  
**CYRIL FALLS**

This is the first volume so far published dealing with the European Theater of Operations in the series "United States Army in World War II." If the rest proves as good it will be excellent. Official military history never makes light reading. Maj. Gen. Harry J. Malony says that one of the objects of the Department of the Army is "to help enlarge the thoughtful citizen's concept of national security" in this series. I hope it will succeed; but I expect the chief appeal to

be to the professionals and then to veterans of the Third Army.

Yet this sort of history can be decently and lucidly written. Dr. Cole's work is. It is also as frank as can be expected. When troops fall below their best he says so. When commanders set them virtually impossible tasks he clearly implies that this has been the case. He records adverse German criticism. I feel, however, that he is a little too discursive and that a gentle pruning would have improved the work by making it more vivid.

The maps are clear and handsome. As regards the photographs, I regard some just as pleasant embellishments, but the obliques taken from the air are first-class features. They have a genuine tactical significance—for the student the next best thing to a visit to the ground.

A mark of good military history is that, while the enemy's situation may be described more briefly than that of one's own side, it should always be made equally clear. Here this need has been amply met. The period is interesting from this point of view. Hitler had realised the danger from the west. He had created a number of new divisions and provided numerous fortress troops. He had turned over to the west brand-new Panzer brigades equipped with Panthers, though he would have been wiser to put the new armor into the skeleton Panzer divisions. The human material was often poor, but some of the crocks fought remarkably well.

On top of all this the Third Army faced many rivers which soon flooded into wide sheets of water. There were the forts of the Metz-Thionville region, the Maginot Line, and beyond

them the West Wall. On the other hand, the Third Army had generally about a two to one numerical superiority, better and far more numerous artillery, more shell, more armor, strong air support when weather permitted, whereas the troops seldom saw a German aircraft.

At the beginning of September, 1944, the Third Army, with two big bridgeheads over the Meuse, faced the Lorraine campaign with a belief that its progress to the Rhine was going to resemble that which it had made since the break-out. General Patton's confidence was shared by General Eisenhower. In fact, amid the floods, the Lorraine mud, the forts, and the pillboxes, a new type of warfare developed. Progress was slow, painful, and costly. When the German Ardennes offensive brought

*Continued on page 54*

### The Author



Hugh M. Cole taught military history at the University of Chicago prior to World War II. During the war he served as Third Army and Deputy ETO Historian, is now a member of the staff, U.S. Army's Historical Division.

### The Reviewer



Cyril Falls is Chichele Professor of the History of War at Oxford University. He is Military Correspondent of *The Times*, London, and contributor of the weekly column "A Window on the World" to *The Illustrated London News*.



many could be turned westwards. Should, however, Britain be overwhelmed in North Africa, the Middle East might be lost. These two possibilities set up stresses and strains, Russia pulling one way and Britain the other. But assistance of either depended on American shipping, which at the time was lamentably short.

Next, in June, 1942, the crushing defeat sustained by the British in Libya pushed the project of the invasion of North Africa to the fore. Mr. Churchill was its protagonist, and though General George C. Marshall opposed it, on July 25 President Roosevelt decided that it should be made. Thereupon the planning for a cross-Channel attack, known as "Roundup," came virtually to a standstill.

The North African invasion was an unqualified success, so much so that new stresses and strains at once set up between the two Western Allies. These led to another conference, one of the most important of the war, and when on January 12, 1943, it assembled at Casablanca, the shape of the war had again greatly changed. In Russia, Germany had shot her last bolt, which meant that a Russo-German peace was now highly unlikely. This shifted the dominant allied problem from a political question onto the inherent strategic differences between the two allies. It is important to fathom them, for when differences spring from deep-rooted causes, history is apt to repeat itself.

What were these causes? That Britain is an island power, and America a sea-girt continental power. Whereas the smallness of the former has always made her chary to commit herself fully in a continental war, the vastness of the latter instinctively urges her to do so. We British are the exponents of the indirect approach and look upon war as a business; you Americans are the champions of the knock-out blow, and you look upon war as a crusade. These differences explain the wrangle at Casablanca. The American perspective was Napoleonic—seek out the enemy's main army and destroy it; the British was Frederician, a balancing of forces, and therefore more opportunist. As General Bradley has so well said: "...



Captured German Photo

Rommel and staff look over the Normandy beaches . . .

having once entered the Mediterranean, the British were reluctant to leave it. Whatever that sea lacked in military advantage it offered in political opportunity."

The deciding factor in this wrangle was, however, neither strategy nor politics, it was landing craft. Sufficient could not be produced for a cross-Channel attack before 1944. A half-measure was, therefore, decided on, namely that a cross-Channel planning

staff known as "Cossac," should at once set to work, and that, directly Africa was conquered, in order to draw German forces away from Russia, Sicily was to be invaded.

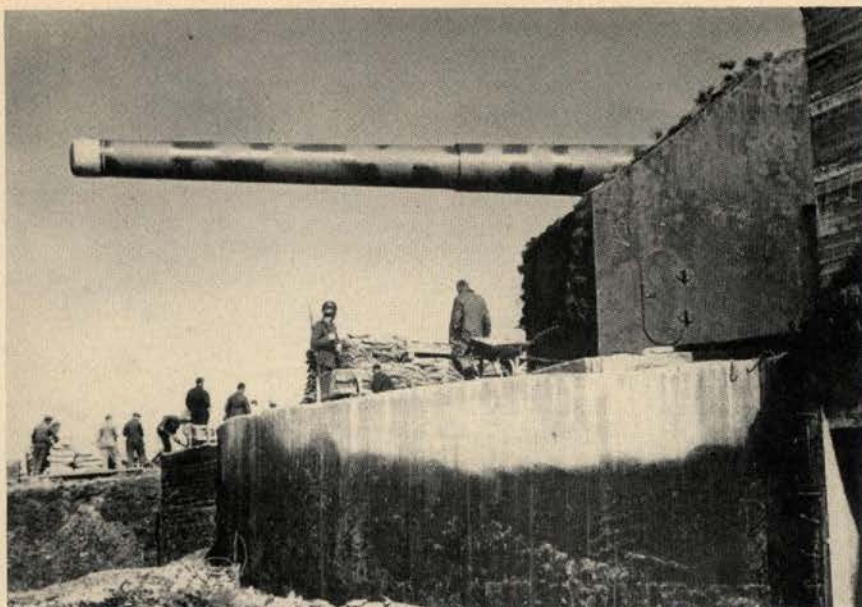
The cross-Channel project now passed into its preliminary planning stage, but before it had gone far, the rapid conquest of Sicily and the fall of Mussolini once again changed the shape of the war and re-precipitated the Anglo-American wrangle. Italy



U.S. Army

Eisenhower and top commanders lay the groundwork . . .





Captured German Photo

... where the Westwall is prepared for defense ...

was now to be invaded, and the forces needed for it called for a reduction of the build-up of "Overlord," as the plan of the invasion of North-western France in 1944 had by now been named.

This new wrangle centred, not on whether "Overlord" should or should not be carried out, but on the date of its launching. As Mr. Harrison explains it: "The British said in effect, 'How can we tell what we should do

six months or a year hence until we know how we come out of the next month's action?' The Americans retorted, 'How do we know whether next month's action is wise unless we know where we want to be a year from now?'" The argument was as unanswerable as that of which comes first, the hen or the egg? Again it led to a half-measure: "Overlord" was not cancelled, but somewhat vaguely postponed while Italy was conquered.



U.S. Coast Guard

... for the invasion of the European continent ...

At length a full measure was reached and through an extraordinary misunderstanding of Soviet strategy and aims. In October, at a meeting of U. S. and British military and diplomatic representatives with Russia at Moscow, the American General John R. Deane became convinced that there were signs that Russia might prefer an intensification of the campaign in Italy, or the launching of an invasion of the Balkans, to the "Overlord" project. Next, on November 28, at the Teheran Conference, this possibility was raised, and Stalin's answer was an emphatic "No!" North-western France was Stalin's choice, not only because it was strategically the right spot, but also politically the most distant from the Balkans!

With the appointment, on January 14, 1944, of General Eisenhower to the command of the Allied Expeditionary Force, the travail of "Overlord" ended: from then on there was no going back.

The first step the Supreme Commander took was to widen the frontage of the initial assault from three to five divisions, in order to bring the Cotentin within the invasion area. As this demanded additional landing craft, not only had the date of the invasion to be postponed for a month—a most unfortunate necessity, as it meant the loss of thirty days good campaigning weather—but every other maritime operation then in progress had to be crippled by the surrender of landing craft. Finally, June 4 was fixed upon as D-day.

From here, which brings the reader to less than halfway through this vastly instructive volume, space prohibits me touching upon more than three salient points.

The first is that, as the Battle of Cambrai in 1917 may be said to have introduced sea warfare on land, the invasion of Normandy, as also all previous invasions in which landing craft had figured, may be said to have introduced land warfare at sea. The tactical change was startling. Hitherto overseas invasions had been so difficult and risky that they were seldom attempted. Now, with the aid of landing craft, which tactically spanned the old gap between ship and shore, they became, comparatively speaking, so easy that throughout the war not a single one failed.

*Continued on next page*



The second point is: whereas in the past cavalry was employed to search out, find, picket, fix and immobilize the enemy, and also to raid his communications and rear services, in order to prepare the way for the infantry battle, so to-day, in order to guarantee the success of an overseas invasion—a land battle launched from the sea—it is incumbent on the cavalry of the air to do exactly the same. On this vitally important question I commend to the reader the whole of Chapter VI for careful study.

The third and last point is that throughout the latter half of this volume one fact again and again hammers at the attention of the reader. Though in no previous war had science and industry played so important a part, as in all past wars it was man and not the machine or weapon who triumphed—the thinker, the planner, the administrator, the commander, the leader, and finally the fighting soldier. Further still, among these many types of men who go to make up the battle, as always, the unaccountable and incalculable one is the hero, that intrepid and fearless man—a Captain Omery C. Weathers, a Corporal John D. Kelly or a Private Ralph G. Riley—who does something God-given.

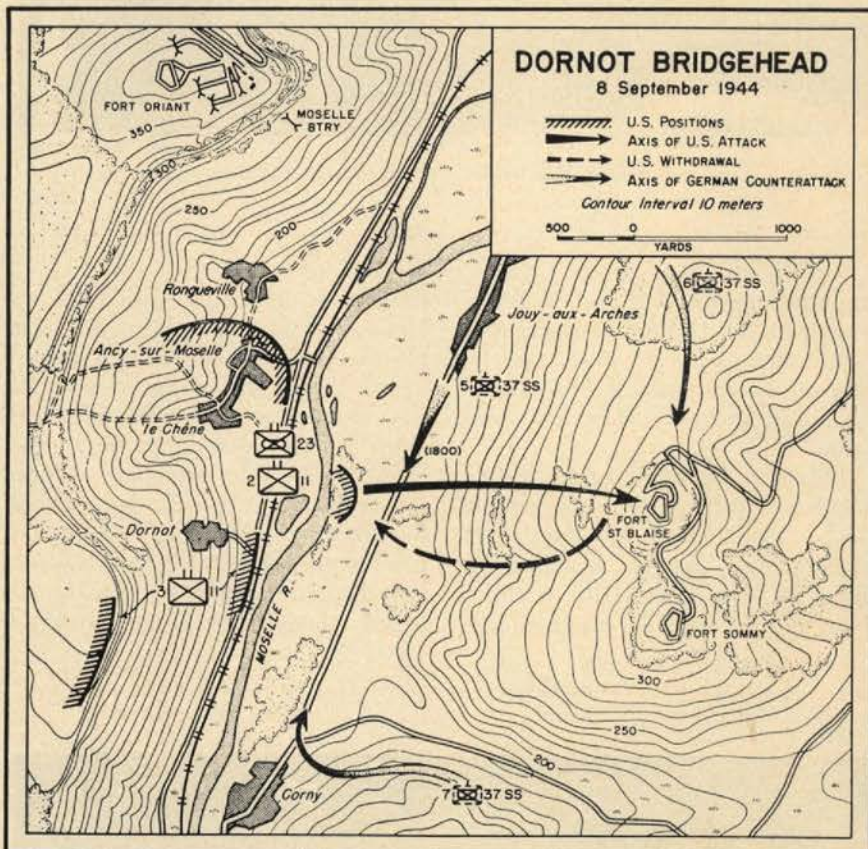
Since history should be a laboratory and not a museum, what is the leading lesson of this volume? If I read Mr. Harrison aright, because the oceans and the seas girdle the land, it is the might and majesty of sea power.

It was sea power which enabled the Western allies to draw on the resources of the entire world outside the enemy countries, and thereby sustain themselves during the war. It was sea power which deprived their enemies of essential raw materials, and therefore hastened their defeat. It was sea power which halted Hitler on the southern shore of the English Channel and compelled him to over-extend his armies by occupying hundreds of miles of coast lines. It was sea power which enabled Russia to hold the field, and ultimately, as described in this volume, it was sea power which enabled the Western Armada to cross the Channel to Normandy. Sea power was the grand catalyst of victory.

the advance to a stop the Third Army had fought its way through to the West Wall, but that obstacle remained unbreached.

Dr. Cole is discreet in dealing with the great controversy on "broad-front versus narrow-front" strategy—"Ike versus Monty"—but gives the essential considerations. Of course Patton thought himself as ill used as did Montgomery. I incline to the view that the so-called subordination of the role of the Third Army to the offen-

great thrust through the West Wall at Aachen have been expedited, enlarged, and maintained on a fuller gasoline allotment at the most critical stage of this advance? What would have been the effect of a more generous treatment of General Hodges upon the use of the slender German reserves? (The Third Army can hardly be said to have drawn off directly opposition from the First, but it did exercise an important effect by causing divisions ordered north to remain where they were, or anyhow in retarding their departure.)



XX Corps crossing of the Moselle River.

R. Hanson

sives farther north was not a major factor in slowing down its progress. The hold-ups at the beginning of September and in the last week of the month were very brief. I imagine that logistic overstrain would have been hampering anyhow in the first period, and in the second the Third Army was able to get on with some short-range operations which could not have been avoided anyhow.

A more subtle question is how far the Third Army's slightly limited but still very big role prejudiced the advance to the Ruhr, but it is one that is very difficult to answer. Could the

I will say only that, with what I hope are common-sense reservations, I remain an unrepentant believer in the narrow-front doctrine. In case this should be set down as due to national prejudice, I add that, in my view, it would have been well if the British 21st Army Group had cleared the Antwerp approaches, a godsend to the whole supply situation, before attempting the "Market Garden" operation for the jumping of the water lines on the axis Nijmegen-Arnhem.

A reviewer can, and ought to, be even franker than the frankest official historian, though he should also be



humbler, since his knowledge is far inferior. Bearing both considerations in mind, I will deal with the most unhappy incident recorded in the book, the underestimation of the Metz defences. It may have been legitimate optimism to regard Metz-Thionville as an "intermediate" position. It was less excusable that the Third Army should have been reduced to the use of road maps because, after all, long before the invasion everyone expected to get to the Rhine. These are small matters by comparison with the bludgeoning tactics—carried out with a light and battered bludgeon.

To me it seems that the 5th Division was mishandled, not by its commander but by the XX Corps, put in under an adventurous plan, with inadequate information, and then blamed for not accomplishing the practically impossible. If the troops got a bit shaken by the end of the affair, it was excusable; but in fact their morale remained good and they did well later in the campaign. It must be admitted that this rough lesson was absorbed, as such lessons always are in the United States Army.

I experienced a genuine sentimental pleasure in finding that there was not a trace of propaganda in the reputation of the 4th Armored Division, and it is to be judged here in conditions more difficult than those of the "swanning" of 1945. Much of the work it had to do was on heavy ground with all too much fortification about. How brilliant it could be in better conditions was shown in September east of Arracourt and north of the canalised Sanon.



Captured German Photo  
General der Panzertruppen Hasso Ecard von Manteuffel.

It is interesting to see how well the M-4 tanks did against the German Marks 4 and even 5 on rough ground so long as the ground remained reasonably dry. Later they did well enough too, but only at a cost heavier to themselves than to the enemy. The British railed at the Shermans, but

### THE ARMY'S HISTORY PROGRAM

*Cross-Channel Attack* is the seventh volume to be published in *THE U. S. ARMY IN WORLD WAR II*, a 90-odd volume comprehensive narrative history being prepared by professional historians under the supervision of the Office of the Chief of Military History. Within the series itself, a nine-volume subseries on *The War in Europe* is being prepared, of which *Cross-Channel Attack* is the second to be published, having been preceded by *The Lorraine Campaign*.

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prepared under the direction  
of H. M. Cole

The Cross-Channel Attack

Breakout and Pursuit

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The Ardennes

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Germany

The Supreme Command

Logistical Support of the Armies

were lucky that the United States had got them to give. It seems that as matters became stickier, in every sense of the word, the armor got more and more split up and "tied to the infantry." This is a horrifying state of things to the experts like Guderian, whose book I have been reading, but it was the same thing with the Ger-



U.S. Army  
General George S. Patton,  
Third Army Commander.

mans. Rigidly fixed principles cannot be adhered to in such matters. Adaptation to circumstances is the only unchanging adage.

Bad weather and the switching of Brig. Gen. Weyland's fine XIX TAC to attack on the Brest defences robbed the Third Army of a great deal of close air support. As one comes upon instances of the XIX TAC's intervention, however, one realises how overwhelmingly effective it was and how disheartening it must have been to the Germans, who were likewise handicapped by longer-range air attacks on troops in movement and supply lines.

Thus both sides suffered from restrictive gasoline shortage for different reasons, though the Germans were the worse off. As an elderly soldier I find some quiet amusement in the fact that in such a case the only units—here German units—which can move at all are those moved by animal traction. The old horse could sometimes shift a German infantry division, but when you stall on gasoline you stall thoroughly. Dr. Cole also tells us that the unhappy German infantry had to march because there was no gasoline for its trucks—and therefore did not get "trench foot."

My last word must be about a few of the magnificent actions of United States troops. Stories like that of the Dornot bridgehead over the Moselle, the rout of the 11th Panzer Brigade at Juvelize, the capture of the Illange forts, the defence of Distroff, the XX Corps' passage of the Sarre—these and other incidents deserve to be accorded an honorable place in the annals of the United States Army.



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MARCH-APRIL, 1952

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## LETTERS to the EDITOR

### More on Old Bill

Dear Sir:

In your Letters to the Editor column in the January-February issue, you have letters by two Colonel Scherers on Fred-eric Remington's picture, Old Bill. I am most interested in this, and I send you herewith a copy of a news story which we are running out of this interchange of letters. You see, Frederic Remington was born in Canton (New York) on October 1, 1861, and as a result of that we have quite an interest in him throughout this territory. My father, who died two and a half years ago, was tremendously interested in the Remington pictures, and while he never made a collection of them, I believe that he accumulated considerable in the way of Remington history and information. Our morgue here is full of it, but nowhere have I found any reference to Old Bill. You see, therefore, that we who consider ourselves expert on the subject are most interested in the discovery by ARMOR magazine, and I was particularly glad to see the January-February issue.

JOHN B. JOHNSON  
Editor

*Watertown Daily Times*  
Watertown, N. Y.

### Tank Regiment Support

Dear Sir:

After two and a half years and six thousand miles in the same M26 as a platoon leader in the best tank company in the U. S. Army, I heartily agree with Col. Pickett's suggestion of a tank regiment in the infantry division. ("Tanks in Korea," Nov-Dec issue ARMOR.)

LT. FREDERICK E. TIBBETTS  
Tank Company, 26th Infantry

APO 1

### A Two-way Lesson

Dear Sir:

The November-December "What Would You Do?" is, as always, excellent, and in this case makes two particularly good points: (1) The importance of correctly placing your forward air controller, and (2) The value to be gained from correct use of Army schools.

My observations on recent maneuvers both in Germany and Austria were that the arrival of the air controller at a small size unit usually caught its commander off base. Perhaps his head was so full of classroom jumble of TACC, TACP, FAC, SOC, TADC, that the sudden realization that the FAC was a real, live being was a bit of a shock. At any rate, the air controller can be a pretty valuable fellow, and it's a good idea to plan ahead for his arrival.

Many unit commanders fail, I think, to appreciate the value of Army schools. Either they are ignorant of their existence or they are loath to interrupt or lose the services of a "key" man. School quotas are too often filled by undesirables who are sloughed off by their CO. Of course, Captain Brown in your problem is going to be short a few good men, but the result will repay him tenfold in the end.

LT. THOMAS B. CORMACK  
NCO Academy  
USFA TAC COMD

APO 174

### Under Its Own Power

Dear Sir:

In Situation 1 of "What Would You Do?" in the Jan-Feb issue I believe that the damaged M46 could be removed to the rear under its own power and by its own crew by replacing the track around

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**Rates:** See bottom of contents page.



the drive sprocket and remaining road wheels and support rollers and tightening track tension. Then, by swinging the gun as a weight counterbalance, relieving the damaged side to some extent, and by the driver counteracting the drag on the damaged side, the tank could be moved to the rear. This solution seems to me to be practical from a common sense angle, although I have not had practical experience in doing it.

PFC WILLIAM WUNDUKE, USMC  
8th Ord Sup Co  
2nd Combat Service Group, FMF  
Camp LeJeune, N. C.

### Night Firing

Dear Sir:

I have just completed a 17 months tour with the 509th Tank Battalion, Camp Polk, La., and would like to know what others think of the following comments based on observation and past experience.

The present ATP allows adequate training for tank gunnery techniques and practical application through range firing but it seems more stress could be placed on night firing.

It is suggested that a phase of training be adopted to provide for the siting of tank weapons within a perimeter or mobile defense position during daylight hours using the azimuth indicator and quadrant, the targets to be actually engaged by fire at night along avenues of approach or areas of concentration. Fires could be called on order of Platoon Leader with a return to a final protective line on order similar to that of the infantry in the MLR. This problem could be conducted under tactical conditions. The unit remaining in position until daylight permitted examination of targets and a critique.

Another phase of night firing for tanks could be developed around the use of artificial lighting with the gunner

using his direct fire sights. It is believed these methods would instill confidence in the tank crewman by demonstrating the effectiveness of their tank weapons in night firing.

The nearest approach to the above that I have observed in training is the night attack demonstration conducted at Ft. Knox utilizing tanks and infantry.

Providing the benefits derived from this type of training would outweigh the cost it would certainly increase the combat effectiveness of a tank unit to include this as a part of the advanced training of the tank company.

LT. KENNETH C. LONG  
Shreveport, La.

### Recoilless Conception

Dear Sir:

In late 1943 while in North Africa with the 112th AAA Battalion, I submitted a drawing to the Army of a recoilless weapon design. Since these weapons are now fully developed and in use I was interested to know if my drawing in any way contributed to the invention of them.

ANTHONY LUCCHETTI  
Newark, N. J.

• *ARMOR could run down no specific names and dates on this, as most development and research goes on over a long period of time, with organizations rather than individuals responsible for the results. Security often holds back public knowledge of advances made in the development of new weapons, leading an outsider to consider that his idea might be the first, when in fact pilots of it might be under test. On the one hand, those with complete workable and original ideas have the protection of patent sources available to them. On the other, all branches of the armed services welcome the ideas of all persons and are ready to extend credit where it is due.* —Ed.

## The Memoirs Of Herbert Hoover

Herbert Hoover continues the story of a remarkable career, begun in the fine first volume of his reminiscences, *Years of Adventure*. The years 1920 to 1933 were equally full of adventure, but adventure of a different kind. For him they were "The Political Years," when he held public office. As his record, personal and public, of a memorable era this volume will take a place of first importance in the historical literature of our time.

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### THE COVER

Number 22 is the oldest tank of the 72d Tank Battalion in Korea. Manned by crew members with such names as Brown, Townsend, Fiest and Waldon, hailing from places like Michigan, Ohio, West Virginia and Tennessee, it has gone into battle in company with individuals whose names represent many other countries and peoples. The miniature flags decorating Old 22's turret symbolize the teamwork of nations ready to do battle in support of freedom.



## *Let's Not Lose Division Vision*

It was only a little paragraph, and it was 'way down near the tail end of the release, on the back page. It could easily have been missed. Perhaps many did miss it. Certainly the title on the release would never have given a clue. It merely stated that the ARMY CREATES REINFORCEMENT CATEGORY WITHIN ORGANIZED RESERVE CORPS. There was no hint of un-creating.

The little paragraph read thus: *All Reserve divisions will be Infantry. Lack of adequate training facilities, and difficulties encountered in the proper maintenance of training equipment of Armored and Airborne divisions were factors influencing the decision to redesignate them as Infantry.*

And so Armor lost three armored divisions—the 13th in California, the 21st in Michigan and the 22d in Texas.

There are many reasons behind this. The main purpose, of course, is to "increase substantially the effectiveness of the Reserve." The simplicity of Infantry organization, equipment and training is more suited to the Reserve mission than Armor's more complex, more specialized, more technical, more expensive and more time-consuming make-up.

However, that very complexity requires a training ground for the commanders and staffs of major armor units—a training ground that should be a continuing thing, insuring the supply of future commanders and staff members to replace those lost in normal attrition, pending a mobilization requirement. For the Reserve field there is no substitute spot for preparing Armor's big-time operators—those who must have division vision, as it were.

It is all very well to treat Armor on the battalion level if our mobilization requirements (or the causes of them) cooperate by holding things down to battalion level (for Armor) as Korea did. But another mobilization might stretch things and bust the seams and stays. And these days you don't have all the time in the world to correct things.

Losing these three organizations pares down a division status that was a minimum as things stood. We have now only two real armored divisions—the 1st and 2nd—fleshed out in organization and equipment and personnel and training. The four training divisions—3rd, 5th, 6th and 7th—are that and nothing more. The personnel are new and the training is basic, except for cadre. The two National Guard divisions—49th and 50th—are by nature framework divisions.

It would take a lot of personnel to handle a sizable mobilization. We can hope that the tankers from the 13th, 21st and 22nd will find their way into tank units of some kind. Their experience and preferences demand that much.

All of this leaves us with a whale of a gap on the east wall of the front office. Perhaps the hole can best be filled with photos of the commanders of the 2nd, 6th and 14th Armored Cavalry Regiments. Those are the ones in Germany often described as being *roughly equivalent to an armored division*. It's pretty rough! We've mentioned several times how we'd admire seeing things smoothed out with the reactivation there of the 4th Armored Division.



# Writing American Military History

Military history is the basis for much of our military instruction. Many of us study it periodically, usually under the prodding of the instructional reading requirements.

The writing of military history is something with which we are less familiar. Here again some of us are drawn into the practice, but few of us go beyond the requirements into a voluntary program. Among those who do, perhaps the results might be more uniform and on a higher plane if the individuals knew a little bit more of how to go about it.

ARMOR is in a good position to see the field. The manuscripts that cross the editorial desk, solicited or otherwise, are handled so differently by the various authors that it becomes a major editorial operation to bring them into line for publication. The task involves everything from the organization of the material and the treatment of the subject to the mechanics of current usage in such matters as punctuation, capitalization, abbreviation, designation of military units and geographical locations, and so on.

Against this background, imagine the pleasure with which we greeted the publication of Department of the Army Pamphlet No. 20-200, *Guide to the Writing of Military History*.

Originally intended for special distribution, the *Guide* was published some six months ago. It has now been put on the sales list and ARMOR is happy to report its availability through the Book Department at 35¢ per copy.

We hasten to commend this pamphlet to the attention of those engaged in the study or the writing of military history. If you are preparing a monograph, a thesis, or an article for a service publication, you will find it most useful.

The *Guide* consists of two chapters. The first of these covers research and writing, going into the ramifications such as use of libraries, steps in research, and preparation of material. The second chapter forms a style manual covering usage and format in general. An appendix provides a bibliography intended as a starting point for the researcher.

The military student or writer will save a tremendous amount of time by following the guidance of this pamphlet. Further along the line the editor will save many hours lost in the reworking of articles. The chance of acceptance of an author's material prepared as outlined in this booklet should be proportionately greater, for presentation of a clean and correct manuscript counts high in any editor's consideration. This is particularly so when one editor handles all of the reading and decides on the acceptance or rejection, knowing that he's the one who must put accepted material in final form.

The *Guide to the Writing of American Military History* deserves a wide distribution within the Army. To quote from the introduction: "American military history has been greatly neglected in spite of the fact that it offers unusual opportunities for self-improvement and for original and valuable contributions to the service. A real opportunity exists which should serve as a challenge to military students and to all others interested in military affairs."

The *Guide* has significance in relation to the cultural development of our military personnel.



*Although the need for organic armor in the infantry division has been firmly established the form of organization of the tank elements has been a subject of great discussion. World War II and the operations in Korea have kept the matter under continuing review. In this article an Armor officer who fought in Europe and Korea proposes a tank regiment in substitution for the present divisional battalion-regimental company arrangement. Touching upon one of our major assignment areas, this is a subject of interest to all branch members*

# **TANKS**

## *in the*

# **INFANTRY DIVISION**

by **COLONEL WELBORN G. DOLVIN**



**Colonel Welborn G. Dolvin** is a graduate of the United States Military Academy, Class of 1939. During World War II he served in North Africa and Italy with the 756th Tank Battalion, moving on to command of the 191st Tank Battalion at Anzio Beachhead, and leading that unit through the Italian campaign. Author of the Army Field Manual on Tank-Infantry Tactics, Colonel Dolvin commanded the 89th Tank Battalion when it was flown in cadre from Fort Hood to Korea in late July of 1950 and fleshed out under his command in time to join the 25th Division in the defense against the final North Korean Communist attempt to push the battered United Nations forces into the sea. In the subsequent breakout from the Pusan Perimeter, Task Force Dolvin was much in the headlines. Now back in the States, Colonel Dolvin is assigned to the Ordnance-Signal Section of the Development Branch, Research and Development Division, Office of the Assistant Chief of Staff, G4. He is a member of the Executive Council of the U. S. Armor Association.



**T**HE cost of our armor program in terms of use of strategic matériel and dollars is such that every effort must be made to make the maximum use of every piece of equipment. The elimination of unnecessary items and improvements in manufacturing techniques, while vital, are not enough. After the item has been produced, we must fit it into our organizations in such a manner that we obtain the maximum benefit from it on the battlefield. We should examine our T/O&E's in the light of experience gained since World War II, in maneuvers and in Korea.

In case of mobilization many of our tanks will be employed in infantry divisions. This article will discuss the present organization of tank units in infantry divisions and propose changes to make more efficient use of the tanks now authorized by T/O&E's.

It might be well initially to review the background of our present organization. During World War II, armor support for infantry divisions was provided by attached tank and tank de-

stroyer battalions. It was felt that the opportunity for the employment of armor with infantry divisions would depend upon almost ideal conditions of terrain, weather, and enemy dispositions. When needed, tanks would be attached to the division to participate in the attack. While this system appeared to be right in theory, it did not work very well in actual practice.

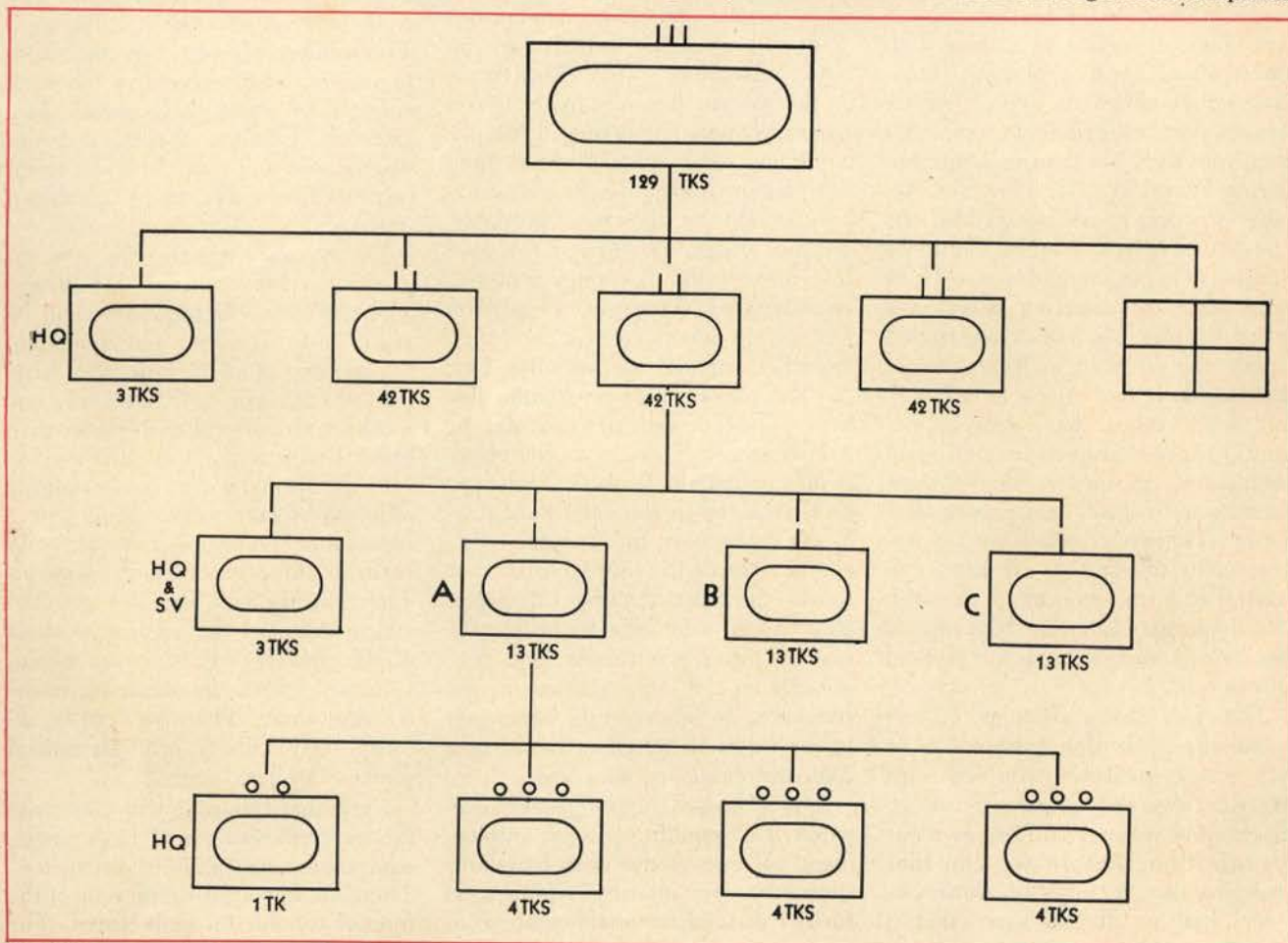
### All Conditions Ideal

First of all, instead of being used rarely, tanks were used almost continuously. Ideal conditions turned out to be a myth. Regardless of enemy dispositions, tanks were employed over every type of terrain during all weather conditions, including rain, snow and ice. Teamwork gained through combined training and so necessary for successful tank-infantry operations was lacking. There were not enough tank battalions to provide them on the basis of one per infantry division. As a result, battalions were shifted from one division to another depending upon which division

had the most urgent need for tanks at the time. For example, in Italy during one month, one battalion's attachment was changed seven times. The tank battalions, consequently, felt that they did not have a home. They felt that no matter how hard they fought with one division, as soon as the operation was over they would be transferred to another division where they would start all over again. Strangely enough, the infantry divisions always thought they were getting a fresh tank unit. On the infantry side of the picture, the division could not count on keeping its tank unit. Often, after careful plans were completed for an operation, the tank unit would be detached and attached to another unit. Later in the war this undesirable situation was somewhat alleviated by keeping the tank battalions with the same infantry division as much as possible.

Following World War II, first the European General Board, then the various branch conferences agreed that tank units should be an organic part of infantry divisions. At the in-

The author's proposed organization—a tank regiment replacing the present divisional battalion and regimental companies.





fantry conference this decision was unanimous. However, a wide divergence of opinion developed over the question of where they should be placed in the division. Generally speaking, division and higher unit commanders felt that tank units should be divisional units. Regimental and lower commanders were just as positive that they should be regimental units. The arguments in favor of each system were many and were presented heatedly by many of the delegates. In the final analysis a compromise was reached and a battalion was placed in each division and a company in each regiment. This is still the tank organization in infantry divisions.

### The Right Direction

It has been proved that this organization is superior to the World War II organization in many ways. Tank and infantry units train together. The tank units belong to the family. Firm plans can be made without the danger of losing the tanks before the attack is carried out. Most important of all, infantry and tank unit commander have a much clearer understanding of each other's problems. This organization, coupled with the increased emphasis placed on tank-infantry employment in our service schools, has resulted in far smoother teamwork in Korea than was obtained during World War II. However, Korean experience has not settled the question of whether tanks should be divisional or regimental units. It is interesting to note that there is a great difference in tank organization among the divisions in Korea. Some divisions have had only a tank battalion, while others have had both a tank battalion and regimental tank companies. It appears that the organization in each case proved adequate. However, enemy armor was practically nonexistent in Korea after the first few months of the war. We must, therefore, not base our armor organization entirely on Korean experience.

The fact that variations of our standard organization appeared to be satisfactory in Korea, coupled with experience gained on maneuvers, indicates that we may still improve our organization. Before we consider changing our organization, however, I feel that we should agree that it

will be impossible to increase to any great extent the number of tanks assigned to an infantry division. The problem, then, is to make the best possible use of the one hundred thirty-five medium tanks now authorized in an infantry division.

I would like to propose the substitution of a tank regiment for the present tank battalion and three companies. This regiment would consist of three small battalions of forty-two tanks each, with three tanks in regimental headquarters. Each company would consist of three platoons of four tanks each with one tank in company headquarters. This adds up to one hundred twenty-nine tanks. This is six less than presently authorized in the infantry division.

This organization has many advantages over the present organization. It will provide tanks on the basis of one battalion per infantry regiment. It will eliminate platoon employment, aid training, simplify maintenance, facilitate supply and increase flexibility.

### Company Employment Better

At the present time it is more or less common practice to employ one or more tank platoons with each infantry battalion. The effectiveness of this system depends upon always having good tank platoons. Tank platoons to a large extent depend upon the platoon leader. If the platoon is commanded by an experienced, aggressive leader, the chances are good that this method of employment will be successful. However, all platoon leaders are not aggressive or experienced. Casualties are inevitable. One day the platoon may be commanded by a capable leader, the next day by a replacement. This replacement leader may potentially be good. However, he is required to learn the hard way. He does not have the company commander constantly available to give needed guidance. Neither is the company commander able to bridge the gap by putting a heavier load temporarily on the other platoons of the company. In other words, we do not have the leavening effect found in a company employed as a unit.

The proposed organization is capable of eliminating platoon employment. If one of the tank battalions supporting an infantry regiment is further divided for attachment to in-

fantry battalions, a small tank company will be available for each infantry battalion. We will then have the company complete, operating on a relatively narrow front. No matter how the company is employed by the battalion, the tank platoons will be within supporting distance of each other. The company commander can actively control his platoons and provide guidance to the platoon leader. He will also be available to the battalion commander in an advisory capacity.

### Combined Training

The present organization has improved training by making tanks available to infantry divisions for combined training. The proposed organization will retain this feature while aiding training in other ways. Whether tanks are organic to the division or to the regiment doesn't appear to make too much difference from a training standpoint. Both division and regimental commanders are interested in training and will see to it that tanks are available as needed for combined training. However, combined training is the final step in welding the tank-infantry-artillery team into an effective fighting unit. The artillery completes its unit training under artillery control before it engages in regimental combat team exercises. Likewise, the armor should complete its unit training under armor control before beginning combined training.

During unit training the new organization offers many advantages. The regimental headquarters will be available to supervise and coordinate the training of all tank units. Therefore, the division will have only one headquarters to deal with rather than four. This is important when we consider the special nature of the training required by tank units. At present, a regimental commander must train both his infantry and tank elements. The training and facilities required are so different that it has in effect duplicated his training problems. Constant efforts are made to reduce training time. This can best be accomplished if similar units are trained under centralized control.

Centralized training will insure also the most efficient use of tank ranges, equipment and qualified instructors. There are few areas in the zone of the interior suitable for tank ranges. The



ranges themselves are expensive to build and maintain. It will not be possible to provide tank firing facilities at all infantry division training camps. Therefore, it will be necessary, usually, for tank units to move to special areas for their gunnery training. All the tank elements of the division will be under control of one headquarters while separated from their parent division. Units in training are not usually issued full T/O&E equipment. This requires that available equipment be pooled or transferred from unit to unit in order to get the maximum use out of it.

Qualified instructors are always in short supply during mobilization. This is especially true of technicians. Those available must be closely controlled if their skills are to be used to the maximum. Finally, centralized training will insure uniformity in the training of all tank units. The division commander can be assured that all his units are receiving the benefit of all the technical and training skill available to the division.

#### **Maintenance Advantages**

As tanks become more complex and expensive, the necessity for good maintenance increases. This not only means that proper preventive maintenance must be constantly practiced but disabled tanks must be retrieved, promptly repaired and either returned to service or evacuated to higher echelons of maintenance. This requires parts, equipment, trained personnel and an organization designed to perform the job. While good maintenance sounds like an easy thing to attain, in actual practice it is very difficult. Even if a unit starts out with adequate parts, equipment and personnel, it soon ends up short. The smaller the size of the unit the more any shortage is felt.

For example, at present, the maintenance of approximately one-half the tanks in the division falls on the three regimental tank companies and the tank company sections of the three regimental service companies. The parts, equipment and personnel available to the regimental elements are extremely limited. The proposed organization will provide not only the tank company maintenance sections, but also the tank battalion maintenance platoon and any tank regimental maintenance elements that

may be authorized. A unit of battalion size carries more spare parts and is provided with more maintenance vehicles and equipment. Moreover, due to its size, it is authorized more specialists. It is more flexible in that the entire maintenance support of the battalion can be used to support any elements as the need arises. The net result will be that more tanks can be repaired farther forward. They will, therefore, be returned to action in the shortest possible time. By judicious rotation of battalions, the tank regimental commander can provide those battalions in need of maintenance the necessary time to get it accomplished. Thus, the infantry regimental com-

*For complementary material on the author and the employment of tanks in the infantry division, see Sum & Substance in this issue, and in the issues of May-June and November-December 1951. See also "The Infantry Regiment's Tank Company" in the issue of September-October 1951 and "Catching the Enemy Off Guard" in the issue of July-August 1951.—Ed.*

mander will get adequate tank support without the responsibility for the administration of the tank units.

Very similar to the maintenance problem is the supply problem. Tanks use huge tonnages of gas and ammunition. This places a heavy load on the infantry regimental service elements. The proposed organization has a supply platoon especially organized, equipped and trained to supply the tank units.

The regimental organization is much more flexible than the present organization. The tank regiment can be used as a unit or the three self-sustained battalions can be used in support of the infantry regiments. The number of battalions used to support any regiment would depend upon the situation. It is often desirable for infantry divisions to form mo-

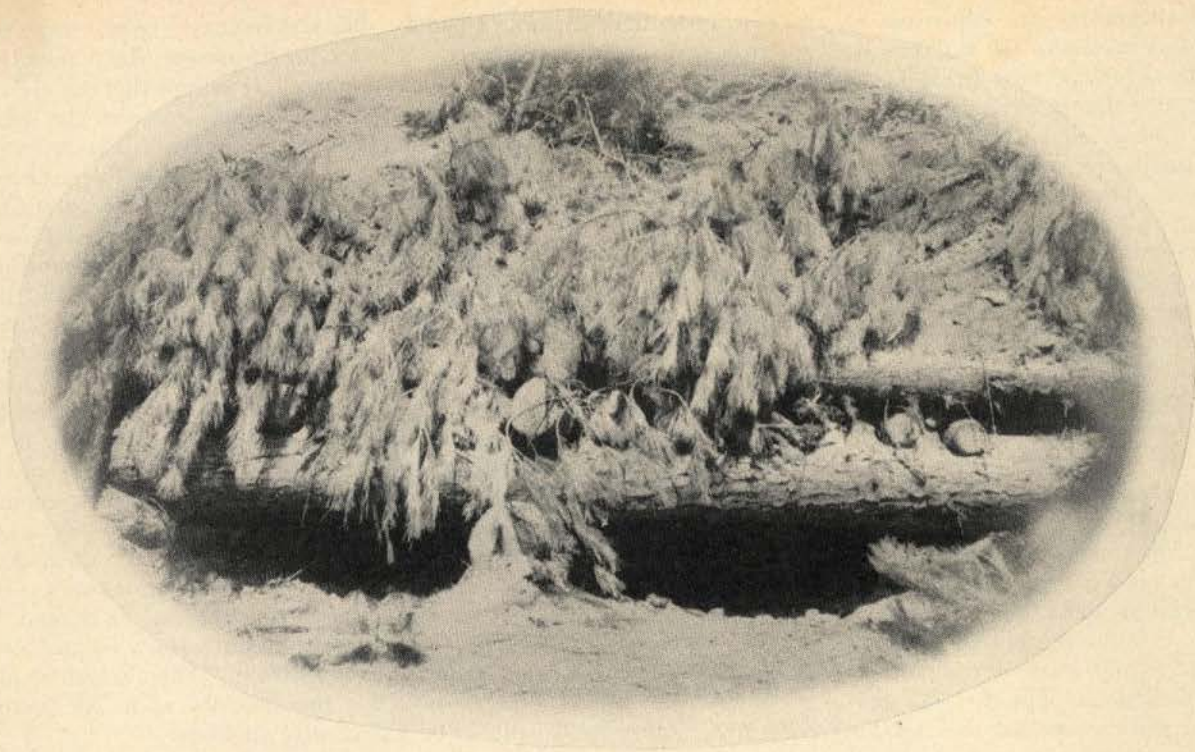
bile task forces to exploit enemy weaknesses. At present, these must be improvised by using either the divisional tank battalion or one of the infantry units as a nucleus. This takes time when it is least available. The tank regiment would provide a ready-made headquarters to control task forces. It would have the required trained staff, communications facilities, and maintenance and supply capabilities to support mobile forces. Its commander would have a rank commensurate with the size of the unit he would be called upon to command. In this respect he would be on an equal footing with the three infantry regimental commanders. In his capacity as armor adviser to the division commander he would be alert to point out opportunities to use mobile forces and have plans constantly ready for any possible employment. This would result in an increased use of mobile forces by infantry divisions.

#### **Increased Efficiency**

The proposed organization will have to include necessary headquarters, maintenance, communication and supply personnel. Without doubt this will require a small increase in personnel. It should be borne in mind, however, that our new tanks have a crew of only four men. This reduction in the crew from five to four was not done because it was felt that four men were adequate to operate and maintain the tank. Space and stowage considerations dictated this change. In fact, it is generally conceded that the support personnel in tank units will have to be increased without a proportionate increase in the number of tanks. Therefore, if we consider that tank crews have been reduced from five to four, that six tank crews will be eliminated and that the present personnel in the tank sections of the regimental service companies will be available, the over-all increase in personnel will be extremely small. This small increase in personnel will be more than made up for by increased efficiency of operations.

Our present-day tanks are expensive to build. Their manufacture requires time, large facilities, and much matériel. They require skillful, highly trained personnel to operate and maintain. It is vital that they be organized into units capable of doing the greatest possible good on the battlefield.





## *Bunker Destruction by Tank Cannon*

by **LIEUTENANT COLONEL CARROLL McFALLS, JR.**

**P**OSITION warfare was adopted by both enemy and friendly forces in Korea during the summer and autumn of 1951. The enemy defense system was based on the construction and tactical employment of well built camouflaged bunkers. These bunkers were expertly sited and were extensively employed. Actually, whole hilltops became hollowed-out fortresses of incredible strength. The firing embrasures of bunkers were placed to allow mutual fire support between two or more bunkers in the same system. The bunkers were built to house and protect troops, supplies and weapons. They varied in size from those required for two or three men to those required for entire companies. The gun chambers were designed for the emplacement and employment of weapons from the submachine gun to the field piece.

For background on the author see Sum & Substance.

Limited objective attacks designed to break the enemy's main line of resistance were launched on the west-central front in Korea during the month of October 1951. It soon became apparent that the success of the attacks hinged upon the ability of the attacking forces to destroy or neutralize the extensive bunkers employed by the enemy in his defensive system.

A systematic bunker destruction campaign was initiated and vigorously pursued through the employment of all available weapons. These weapons included aircraft, artillery, tanks, recoilless rifles, mortars; and finally, demolition charges, flame throwers and grenades. It became clear as the battle progressed, that tactical success was possible in an area only after the defending bunkers in that area were rendered unusable, and kept unusable, through the employment of a heavy volume of fire from heavy caliber ordnance. Because of its armor-protected fire power, its mobility,

and its ability to deliver direct cannon fire, the tank was extensively employed in the neutralization and destruction of bunkers.

Tanks were employed as far forward as the terrain would permit, often closing to within a few yards of the target. Initially, much ammunition was wasted because of the inexperience of tank crews in the technique of bunker destruction and their lack of knowledge of the gunnery problem presented by a bunker. In some instances insufficient ammunition was expended on specific bunkers for the same reasons. As the battle progressed certain efficient techniques were developed by tank crews through the process of trial and error. During the latter stages of the campaign, tanks were destroying or neutralizing bunkers swiftly and efficiently with a minimum expenditure of ammunition.

To assist in the training of tank crews in the destruction of bunkers by tank fire and to insure maximum





*During the uneasy war occasioned by the dragging truce talks at Panmunjom, both sides have dug in on the mountainous Korean terrain. The long winter has given our forces a chance to develop various methods of reducing Communist positions. Bunker reduction has become a key operation in the months of position warfare.*

efficiency in the battlefield engagement of such targets, an analysis of the various techniques was made and a standard procedure developed. This procedure is presented here and is recommended for inclusion in all future tank gunnery training.

In an effort to minimize the effect of friendly artillery fire and air strikes, the Chinese Communist Forces constructed their main line of resistance on the topographical crest of dominant terrain features. Rarely was the reverse slope of a terrain feature organized for defense. However, extensive troop and supply shelters and communication trenches were constructed on the reverse slopes and were often used for defense after the main positions on the topographical crest were overrun.

The forward slopes did not contain extensive emplacements, consisting for the most part of covered foxholes and a few automatic weapon positions employed for the purposes of close-in security of the main battle

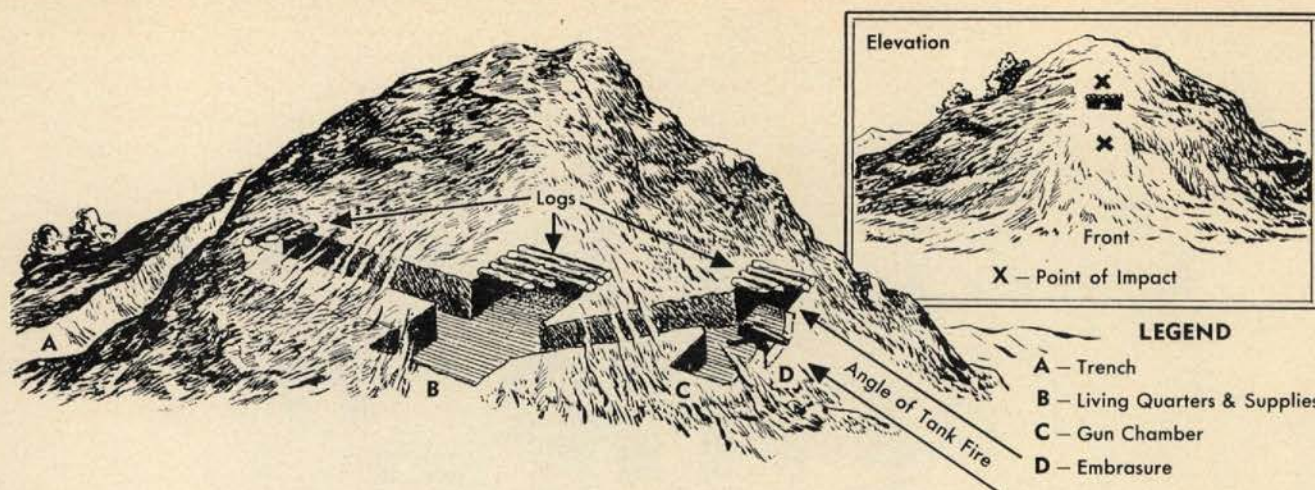
position. The principle of the forward slope defense was followed to some degree, however, by the location of bunker firing embrasures at varying distances below the topographical crest. Little or no tactical wire and few antipersonnel mine fields and booby traps were incorporated into the defensive system. Expert use was made of antitank mines. These mines were laid in profusion and with no standard pattern in all avenues of approach available to friendly armor. Where the terrain would permit, antitank ditches were constructed.

In the construction of his emplacements, the enemy used the technique of tunneling and shoring up rather than the technique of excavation. He did not, as is the normal procedure with the American Army, dig an emplacement from the top down and cover the resulting hole with logs, earth, sandbags and rock. Instead he tunneled through an entire hill, enlarging sections of the tunnel into shelters and firing chambers. He then

reinforced the enlarged sections, and the entire emplacement, if necessary, with layers of logs. (Figure 1) This technique resulted in an emplacement of great natural strength and, since it did not disturb the natural camouflage of soil and growth on the top, one which was well concealed from ground observation. However, the general trace of the defensive system, to include some of the bunkers, could be easily pin-pointed from the air due to the enemy's use of the spoil from trenches as parapets and his failure to camouflage these trenches from aerial observation.

The enemy constructed bunkers and other emplacements of varying shapes and sizes, each designed for a specific purpose. The general method of construction was standardized and the majority of the bunkers generally followed the plan as indicated in Figure 2. Fire and connecting trenches were normally one to one and a half meters in depth and only wide enough for the passage of a





single soldier. Individual firing positions were located at intervals along a fire trench; some covered, some open. Supplies of grenades were placed at intervals along fire trenches. This was done by hollowing out small spaces in the sides of the trench near its bottom. Since the soil on the west-central front in Korea is predominantly rocky clay, revetment of trenches was seldom necessary. Troop, supply and gun chambers were reinforced by layers of logs, utilizing heavy logs as supporting beams. A minimum of nails was used, the logs and supporting beams being notched to fit and wedged into place. The tunnel from the communication trench to the troop or supply shelter and the tunnel from the troop or supply shelter to the gun chamber was either straight and level or offset, zigzagged and slanted. The tunnel from the troop or supply shelter to the gun chamber

was usually slanted upward. Normally tunnels were wide enough to permit the passage of only one soldier at a time. Some were high enough to allow a soldier to walk normally; some so low as to permit travel by crawling only.

The enemy constructed his emplacements through the use of front-line troops and indigenous labor. He utilized hand tools and explosives for even the heaviest type of construction. Engineer troops and heavy engineer supplies and equipment were not available to the enemy. Even if heavy engineer equipment were available, it would have been next to impossible to get it into position on the tops of the majority of the precipitous ridgelines chosen by the enemy for defense.

Immediately upon occupation of a position the enemy commenced the construction of trenches and bunkers.

If he considered the area vital to his defense, he would accept casualties and continue work under heavy artillery fire. Normally, however, most of the construction work was done at night. The enemy continually repaired damage to his emplacements caused by friendly artillery and tank fire and air strikes; a fact which must be considered by troops engaged in the attack and destruction of bunkers.

The initial problem confronting troops committed to the attack of a defensive system composed of bunkers is the location of the main line of resistance and of bunkers, individually and collectively.

The general location of the main line of resistance in Korea was determined in the normal manner and disseminated to assault troops by higher headquarters. The exact location (and disposition of troops therein) of the main line of resistance in their sector was determined by the troops operating in that sector and accomplished by patrols, both dismounted and tank-infantry, aerial photographs, map studies, aerial reconnaissance, ground observation and prisoners of war. The location of individual bunkers and their firing embrasures was determined almost entirely by ground reconnaissance and observation. Tank crews of tanks employed on the friendly main line of resistance assisted in the exact location of bunkers and their firing embrasures. This was done by observation, utilizing binoculars and the telescopic sight of the tank cannon, and by employing reconnaissance by fire.

After the exact location of bunkers and their firing embrasures has been determined the information should be compiled and plotted on a sketch,



View of the Communist main line of resistance. Friendly troops attacked from the right. The bunker in the foreground withstood over 200 rounds of 76mm tank cannon fire before it was destroyed. 77 Chinese were killed, mostly by the 76.



overlay or map. This information is then disseminated to the troops who are to be employed in the area. (Although this last procedure is basic, it was violated or haphazardly accomplished on many occasions. As a result, troops were committed to the attack without a clear knowledge of the location of bunkers in their area, although the information was available at their parent unit headquarters. The obvious fact that the assaulting forces must know the location of bunkers in their area cannot be stressed too much. This information is vital to them.) Concurrently with the actual location of bunkers and the dissemination of that information, a bunker destruction campaign was initiated. This campaign should begin several days prior to the actual ground assault and should continue throughout the operation. On the west-central front in Korea, the planned bunker destruction campaign began *after* the attack had commenced.

The initial problem confronting a tank crew committed to a bunker destruction mission is the pin-point location of the firing embrasure. Since the embrasure is usually camouflaged, it is first necessary to remove all natural growth from the area in which the bunker has been located. This mission may be accomplished by other weapons. Air strikes from friendly aircraft employing napalm are highly effective as they burn the growth from a large area. Artillery and mortar fire, utilizing HE, fuse quick, and WP shells, is another effective method of removing camouflage. In the absence of these means, tanks can remove camouflage by delivering fire on the suspected area, using HE, fuse quick, and WP ammunition. This should normally be done only if other means are unavailable because of the necessarily large expenditure of ammunition.

After the natural growth or camouflage has been removed and the embrasure exposed the next consideration is the prevention, or the stopping, of fire from any weapon in the bunker. This is accomplished by the delivery of direct tank cannon fire into the embrasure itself. HE, fuse quick, is used initially, followed by a few rounds of HE, fuse delay, or WP to cause casualties among members of the enemy gun crew who may have

withdrawn into the connecting tunnel or troop or supply shelter.

When the enemy weapon has been silenced, the destruction or serious damage of the bunker is begun. The requirement for silencing enemy weapons in other bunkers may delay this procedure but it must be begun as soon as possible to prevent reoccupation of the gun chamber by the enemy. To avoid waste of ammunition, tank crews must be informed as to the enemy's methods of construction and trained in the technique of bunker destruction prior to the operation.

The problem presented in bunker destruction is the collapse of the roof and the undermining of the gun chamber floor with the end result being a mass of earth and logs occupying the space where the chamber was

located. Since shells which are delivered directly into the embrasure may proceed into the tunnel before exploding, the embrasure itself is not the target. Instead, rounds are delivered at the top of the embrasure and from three to five feet below the embrasure (Figure 3). This will weaken or destroy the roof and undermine the floor resulting in collapse of the entire chamber or sections of it. The projectiles should strike the target on an inclined plane to avoid their propulsion into the connecting tunnel prior to impact (Figure 1).

The ammunition to be used is a combination of APC and HE, fuse delay, and is delivered as follows:

One or more rounds of APC directed immediately above the bunker embrasure followed by one or more rounds of HE, fuse delay.

### *"intense fire from a large bunker."*

Second Lieutenant Jerome A. Sudut, Infantry, United States Army, Company B, 27th Infantry Regiment, distinguished himself by conspicuous gallantry above and beyond the call of duty in action against the enemy near Kumhwa, Korea, on September 12, 1951. His platoon, attacking heavily fortified and strategically located hostile emplacements, had been stopped by intense fire from a large bunker containing several firing posts. Armed with submachine gun, pistol and grenades, Lieutenant Sudut charged the emplacement alone through vicious hostile fire, killing three of the occupants and dispersing the remainder. Painfully wounded, he returned to reorganize his platoon, refused evacuation and led his men in a renewed attack. The enemy had returned to the bunker by means of connecting trenches from other emplacements and the platoon was again halted by devastating fire. Accompanied by an automatic rifleman, Lieutenant Sudut again charged into close-range fire to eliminate the position. When the rifleman was wounded, Lieutenant Sudut seized his weapon and continued alone, killing three of the four remaining occupants. Though mortally wounded and his ammunition exhausted he jumped into the emplacement, and killed the remaining enemy soldier with his trench knife. His singlehanded assault so inspired his comrades that they continued the attack and drove the enemy from the hill, securing the objective. Lieutenant Sudut's consummate fighting spirit, outstanding leadership and gallant self-sacrifice are in keeping with the finest traditions of the Infantry and the United States Army.



One or more rounds of APC directed three to five feet below the embrasure followed by one or more rounds of HE, fuse delay.

This process follows the principle of the "pick and shovel." The APC traveling at terrific speed smashes into the roof and floor and loosens the earth and logs. The following HE blows the loosened material downward and upward along the path of least resistance, the gun chamber. This technique has proven swift, efficient and effective in the destruction of bunkers by tank fire. Note here that only the gun chamber was destroyed. Insofar as assault troops are concerned this is the most important feature of the bunker. The destruction or serious damage of troop or supply shelters, because of their location deep inside the terrain feature, is virtually impossible using the relatively light cannon of the tank. It was attempted on several occasions and despite a tremendous expenditure

of ammunition, was generally unsuccessful.

HVAP ammunition, used in place of APC, is much more effective. Because of its cost, the possibility that enemy tanks may be encountered, and in view of the small number of HVAP rounds carried in the basic load of ammunition of an individual tank, its use should be restricted to only the most heavily constructed bunkers and then only after APC has been used unsuccessfully.

After a bunker has been destroyed and its firing embrasure closed, steps must be taken to insure that it is not repaired, or if repaired that it is redestroyed. Because of the accuracy of tank cannon fire and the armor protection available to the crew, the tank is the best means available for this mission. After bunker embrasures have been closed, either by tanks or other weapons, tanks, in addition to other assigned missions, should be assigned to keep bunkers closed in a

specific area. Since the enemy usually repairs his positions at night, the tank crew must carefully examine the assigned area at first light and reclose all embrasures opened during the night. Often in the course of a violent engagement, the enemy has attempted to repair a vital bunker during daylight hours. Tanks should continue to check and reclose bunkers throughout the day. Tanks should abandon this "watchdog" role only after friendly troops have overrun and either occupied or destroyed the positions.

The tanks that were successfully used in the destruction of bunkers on the west-central front in Korea during the limited objective offensive conducted in the autumn of 1951 were the M4A3E8, mounting the 76mm gun. It was proven (it had obviously been known before) that the 76mm projectile was too light for the task. Although successful it required each tank to expend a heavy volume of ammunition with resultant rapid wear of the gun tubes. The 90mm gun on the M46 tank gave more satisfactory results because of the heavier shell. Both 155mm self-propelled guns and 8-inch self-propelled howitzers were used in the bunker destruction campaign. They were emplaced to allow the delivery of direct fire.

The strength of the enemy's bunker system and the strength of individual bunkers was not realized until the attack had commenced. A terrific volume of fire was necessary to clear away the camouflage and destroy the bunkers. One hill alone was under attack, and received continuous fire from airplanes, tanks, artillery and heavy infantry weapons, for approximately three weeks before it was secured (Figure 4).

To most effectively destroy bunkers, tank crews must have the most detailed information possible concerning the location of the bunker and the enemy's method of bunker construction and must receive specific training in bunker destruction prior to the actual attack. When these two requirements are met, the tank becomes an invaluable weapon in any bunker destruction campaign because of its maneuverability and its ability to provide extremely accurate direct fire from an armor protected cannon.

## *in the next issue . . .*

- *A feature article on the ten ages of the tank.*
- *A feature article on the Military Defense Assistance Program.*
- *Sum & Substance feature devoted to self-propelled artillery in Korea.*
- *A feature review of the new book Rag, Tag and Bobtail, story of America's Continental Army.*
- *A pictorial feature on our top command in Europe.*

out May 25th . . .

## *ARMOR*



# Turkey's ARMORED SCHOOL

by **LIEUTENANT COLONEL WILLIAM O. WYATT**

**O**N Turkey's treeless Anatolian Plain along the outskirts of the Capital city of Ankara, the Turkish Army has located its Armored School. At this school, as with our own Armored School at Fort Knox, the doctrine of employment of Armor units is developed and disseminated to the various classes of commissioned and enlisted personnel in attendance.

The origin of the school dates back to 1943. It was established then as the Tank Training Center and operated under British supervision. In 1946 it was renamed the Tank School, and in 1948 came under the supervision of the U.S. Army Group of the Joint American Military Mission for Aid to Turkey. In 1949 it was renamed the Armored School.

The school is presently commanded by Lt. Col. Tahir Ertan. Some of the British Training Staff are still assigned to it and are rendering invaluable aid to the American Advisory Staff and the Turks.

The American Mission, upon its arrival in Turkey, decided that in order to teach the Turkish Army how to care for and employ the new weapons to be furnished under the Mutual Defense Assistance Pact, it would be desirable to supervise the operation of

all service schools. This was deemed the most efficacious method of disseminating up-to-date information on the tactics and techniques of the new weapons. To the Armor Section, U.S. Army Group, fell the task of directing the preparation of the new Program of Instruction and Lesson Plans for the Armored School, based upon American doctrine. Colonel Louis Hammack, presently on the Staff and Faculty at Fort Knox, directed this initial effort. To assist him were a few American officers, most of whom were former members of the Staff and Faculty at Knox. These officers prepared all units of instruction and delivered them through the medium of interpreters. This required endless hours of toil—preparing units of instruction at night, and spending the major portion of the day on the platform.

As rapidly as possible Turkish Officers were trained to take over the presentation of units of instruction. During the academic year 1950-1951 about 95% of the platform instruction was delivered by Turkish instructors. In the present school year all of the platform instruction is scheduled to be given by the Turkish faculty.

The academic division of the school is organized in a manner similar to that of our own Armored School. There are Automotive, Communications, Command and Staff, and Weapons departments. There are one or more advisors with each department. To coordinate the advisory effort, and to assist the Director of Instruction, is the job of the senior American advisor at the school. Lt. Col. Tokay, the Director of Instruction, just completed a one-year tour as Chief of Staff of the Turkish Brigade in Korea. There are presently at the school seven American officers, one British officer and three NCO's, plus two American civilians. Included among the advisors are representatives of Armor, Artillery, Engineer, Ord-

nance, and Signal Corps. Since the Turkish Armored Brigade is a combined arms fighting team, representation of these arms and services is essential.

As rapidly as it is determined that advisors can be spared, they will be phased out. Thus it is hoped that in the not too distant future, only the advisor to the Director of Instruction will be needed.

The Turkish Armored Brigade, for which the school trains personnel, is about one-third the size of the American armored division. Included among its combat elements are Tank, Reconnaissance, Motorized Infantry, Artillery, and Engineer units. Among its organic service support are Signal, Ordnance Medium Maintenance, Transportation Truck, Medical, and Band units. These brigades are the most modern, mobile troops in the Turkish ground forces today.

The Armored School is presently offering the following courses: Advanced Officer, Basic Officer, Tank Destroyer Officer, Armor Reserve Officer, Armor NCO, Communications Chief, Radio Repairman, Armor Mechanic, Armorer and Artillery Mechanic; and last, but certainly not least, a General Officer's Orientation course. This course is designed to indoctrinate division Commanders and Corps Staff Officers in the employment of Armor.

The Armored School has the mission of furnishing tactically and technically trained personnel to maintain the combat efficiency of the Armored Brigades that stiffen the backbone of the Turkish ground forces. It is an important activity of great responsibility.



**Lt. Col. Tahir Ertan**  
Commandant, Turkish Armored School



**Lt. Col. William O. Wyatt**  
Chief, Armor Section, JAMMAT



# 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.

*Armor is a potent part of the ground arms team on the Korean battlefield. The tank battalions employed across the peninsula represent a striking force that means real backbone in United Nations operations. **ARMOR** turns to the commanders of our combat tank battalions in Korea for the last word on the important subject of **TANK-INFANTRY TEAMWORK**. Here is a roundup by top professionals whose units have been writing the headlines in day-to-day action.*

*The writer of the following served in combat with the 30th Infantry Regiment of the 3d Infantry Division through its entire overseas tour in World War II, progressing from platoon leader through company commander to battalion and regimental staff officer. Since mid-1951 he has commanded the 70th Tank Battalion, 1st Cavalry Division, in Korea and in its present assignment in Japan.*

Throughout all of its campaigns in Korea this division has tactically employed its regiments as tank-infantry teams. Since this division has no regimental tank companies, these teams were formed by the attachment of one tank company from the divisional tank battalion to each of the three regiments. Within this large infantry regiment-tank company team, smaller teams were formed through the attachment, or the employment in direct support, of tank platoons to infantry battalions. Normally, the tank platoons within the infantry battalion-tank platoon team were employed in general support of the entire battalion by the infantry battalion commander. For special operations, the infantry battalion commander combined the entire tank platoon with one of his infantry companies.

Considering the absence of regimental tank companies, the enemy, weather and terrain encountered in Korea, and the Heavy Tank Battalion organization of the divisional tank battalion, this method of tank-infantry team organization and employment was efficient. It provided for the creation of the greatest possible number of tank-infantry teams with the retention of one platoon in re-

serve within each regimental tank-infantry team. This platoon was used to relieve platoons that had been engaged in operations against the enemy, to allow the relieved platoon time for maintenance and rehabilitation, a vital consideration of all tank unit commanders. The platoon was available and used for special operations, to reinforce the infantry battalion making the main effort, to exploit local successes, to engage in counterattacks, to occupy blocking positions behind the front lines, and to relieve tank platoons which had suffered heavy vehicular and/or personnel casualties.

The tank-infantry team in this division throughout the campaigns in Korea has been engaged in every conceivable method of tactical employment. These teams have engaged in offensive action, in defensive action and in retrograde movements. They have been employed in exploitation. Tank-infantry teams have been used

in counterattacks, in patrol actions and as outposts.

Although tank-infantry teams in this division have reached a high state of efficiency, they have done so through the process of trial and error. Both tank unit commanders and infantry unit commanders have been guilty of errors, some of them habitual. The most glaring of these are as follows:

*Failure of the tank unit leader and the infantry unit leader of tank and infantry forces combined as a tank-infantry team to conduct a joint reconnaissance prior to combat. This joint reconnaissance, conducted together or separately by the commanders concerned, is vital to the success of a tank-infantry team mission. It is the only manner in which the effects of the enemy and terrain on the capabilities and limitations of tanks and of infantry committed to operation in a specific area can be determined and a plan of action devised to minimize the effects of the limitations and take advantage of the capabilities of each team member.*

*The lack of knowledge of infantry officers, particularly junior infantry officers, concerning the limitations and capabilities of the tank and of the tremendous logistical effort required to support even the smallest tank unit in combat. This, despite the attention given to tank-infantry instruction in both **Armor** and Infantry schools. It indicates that theoretical instruction is insufficient; that actual practical work type training, during which an infantry officer commands a tank unit for an extended period, should be included in courses of instruction to fill the gap between*



Lt. Col. McFalls



theory in the classroom and the application of that theory on the battlefield.

*Poor communication between individual tanks and infantrymen.* Many times in combat individual infantrymen have climbed on the decks of tanks while under fire in order to speak with the tank commander. This despite the fact that an operative external tank interphone was installed on the tank. It is the responsibility of the tank unit leader and of each individual tank commander to insure that the infantrymen cooperating with them know all the means of communication available. Additionally, infantrymen during their basic training should receive instruction in tank-infantry communications and should be allowed to practice those means available to them for communication with individual tanks. Missions have failed because of the absence of communication between infantry and tanks; although the means for communication was present and in working condition. The number of tanks organic to the modern infantry division requires that every individual combat infantry soldier know how to fight with them. Communication is the lifeblood of tank-infantry team operations.

Infantrymen, not knowing the pinpoint accuracy of tank cannon fire and automatically applying the safety distances required by artillery fire, are reluctant to advance close enough behind tank cannon shell bursts to take fullest advantage of the fire superiority achieved.

Despite the errors listed here, most of which have been corrected, the tank-infantry teams in this division engaged in combat in Korea for over a year have proven themselves; if further proof were necessary. If tank-infantry teams can operate so successfully in Korea, a land which contains little or no "tank country," then tank-infantry teams can operate successfully in any part of the world. Tanks alone and infantry alone have their limitations. When combined as a team these limitations are counterbalanced by each unit's capabilities resulting in an unbeatable combination—providing they are *well trained* in the techniques of fighting as a tank-infantry team.

LT. COL. CARROLL McFALLS, JR.

*The writer of the following served in the Pacific during World War II, at Guadalcanal, Vella Lavella and Bougainville, and in command of the 3d Tank Battalion, USMC, at Guam and Iwo Jima. He commanded the Marine Tank School at Camp Pendleton, California in 1945-46. In Korea for a year, he now commands the 1st Tank Battalion, First Marine Division.*

The history of tank-infantry teamwork in the Marine Corps is almost synonymous with the history of tanks in the Corps. Never equipped nor intended to make slashing armored drives deep into enemy country, our tankers have always been geared to the plodding pace of the infantry. We have learned patience and respect for this way of fighting tanks.

Marines were taught brutal lessons on Guadalcanal and Tarawa and by the time they went ashore at Okinawa, had made an exacting art of the coordinated destruction of enemy bunkers and strong points. Communications between tanks and infantry, formerly carried on by a crude system of colored flags, had developed into a smoothly functioning procedure using the tank-infantry sound power phone or the SCR-300 radio. Infantry units down to squad level, had been drilled in fire and movement maneuver with the tanks. The infantryman was an expert at bringing the tank guns on target using the clock system of target designation.

The greatest factor in the success of tank-infantry teamwork has not been due to technical nor tactical procedure, however, but is due primarily to the cooperative attitude between tankers and the infantry which

they support. In Korea, marine tanks have, almost without exception operated in direct support of infantry units. The infantry commander, from regimental CO to platoon leader, looks upon the supporting tank officer as his personal advisor in matters concerning the employment of tanks. This means, in practice, that the infantry commander tells the tank officer what he wishes the tanks to accomplish and leaves to the tanker the prerogative of recommending *how* it can best be accomplished.

Operations in Korea have imposed certain tactical limitations on tank-infantry employment. The habitual policy of the enemy of bringing artillery and mortar fire onto our tanks has somewhat diminished the use of the tank-infantry phone. The arrival of such fires in any assault where tanks are employed is a virtual certainty. This factor has widened the gap between tanks and supporting troops. The infantry now advances in rear of the tanks and, at the same time, can be afforded the brief warning given by the shrill whistle of an incoming round of artillery.

When the advance of tanks is prohibited by mine fields or other man-made or natural obstacles, we have frequently found it feasible to place tanks on high ground to the rear to support the assault by direct fire immediately over the heads of our advancing troops. Infantry commanders, at first reluctant to trust the tanks for such fires, now have a confidence born of experience and call for tank fire as close as fifty yards from their own lines.

On occasion, when permitted by terrain and other factors, tanks have pushed well ahead of advancing infantry to bypass enemy installations and take up firing positions to their rear. In every case in our experience the enemy has been surprised and confused by this maneuver and has invariably taken considerable losses.

Tank-infantry teamwork is developed to a high degree in the Corps because our tankers are deeply aware that their paramount job is to support the infantry in the most effective fashion possible, and because infantry commanders ask for and apply the experienced advice of the tankers in executing tank-infantry missions.

LT. COL. HOLLY H. EVANS



Lt. Col. Evans



*The writer of the following served with the 31st Tank Battalion, 7th Armored Division, during World War II. He returned to active duty in 1950 to serve a tour with the 131st Tank Battalion, school troops, at Fort Knox, moving on to Korea in October of 1951 to command of the 72d Tank Battalion, 2d Infantry Division.*

Tank-infantry teamwork in Korea is very difficult to define, as it does not follow the definitions found in the text of either the Armored School or the Infantry School. Though we do not, in Korea, due to the terrain, ride the infantry on tanks, we still achieve teamwork through fire support. Most vital to this teamwork is coordination and communications.

Most of the missions assigned have been a type of fire support known as "walking the infantry up an objective." The coordination in an effort of this type has been of paramount importance and is accomplished through various means of communication such as phase lines, pyrotechnics, radio, or a combination of all.

The infantryman's preference to have the tank fire support him as closely as possible found the tankers spacing their shots about fifty yards ahead of the climbing infantryman. In the case of the ROK troops, it has been even closer, and again by their own preference.

In the Mundung-Ni Valley, during "Operation Touchdown," a very successful tank-infantry team consisting of an infantry company supported by a company of tanks, was employed. In the maneuver, three platoons of tanks passed through the advancing infantry to take up direct fire on enemy machine guns, AW's, bunkers and other obstacles, while one platoon advanced along with the infantry to fire on specific targets designated by the infantry company commander.

Tank-infantry teamwork ceases to be a high sounding phrase at night and resolves itself into downright "friendship." The failure on the part of the average infantryman to understand the capabilities and limitations of the tank, and especially at night, is frequently the cause for uneasiness. The necessity for the infantryman to secure the tank at night by means of outpost and listening post should be taught infantry soldiers in basic training. They were found to be under

The contribution of the CO of the 89th Tank Battalion was received too late for inclusion in this issue. It will appear in the next issue.

the misapprehension that to have the fire support of tanks at night, they must be close to the tank position.

During daylight operations, we have used to great success a maneuver of flanking the enemy and delivering fire on him from the rear. In one operation, two platoons of tanks were used to "walk the infantry up," while two more platoons were dispatched to positions behind the objective. The platoons behind the objective had a veritable field day. They were able to destroy the enemy as he attempted to withdraw down the reverse slope of the objective.

I recommend that greater stress be placed on tank-infantry teamwork during a soldier's basic training. Further I feel that commanders of all echelons in the infantry should be required to undergo armor training.

This training would better qualify them to issue instructions or orders to their organic or attached armor units. That is to say, the infantry commander would be able to more fully utilize the tank as a weapon, as he would have an understanding of its capabilities and limitations.

I would recommend no change in the basic employment of tanks as outlined in FM 17-33. However, in view of the wealth of experience gained in Korea on "Operations in Mountains" I would recommend that this particular section of FM 17-33 be covered in more detail.

LT. COL. JOHN O. WOODS



Lt. Col. Woods

*The writer of the following served with the 106th Cavalry in the Panama Canal Zone, and in various training assignments during World War II. He commanded the 773d Tank Battalion of the Louisiana National Guard when it was called to active service. Transferred to the Far East and Korea, he assumed command in September 1951 of the 73d Tank Battalion, 7th Infantry Division.*

The battalion which I presently command has been in action in this particular area since March, 1951. This battalion is operating as a direct support unit to an infantry division with the normal breakdown of one company D/S to each infantry regiment. This situation is most unusual in that the battalion has a direct support mission. The reason for such a mission has no bearing on this story.

This particular type mission is naturally the answer to a tank commander's prayer. It allows the commander a wide latitude in the commitment of his command not normally found in the usual tank attachments.

When the division Commanding General has decided to use tanks and infantry combined in an operation, the commanders of the particular units concerned are called in for a conference. The projected operation is laid before them and they are requested to submit a plan as to their respective roles. We therefore enter the picture in the planning stage, where each is able to advise at once the most advantageous methods of tank and infantry use in support of the effort. We are not concerned then with tactics but are faced with the problem of technique of employment, which, after all, we find, is of primary importance.

This is the stage when we determine whether the infantry rides the tanks, precedes the tanks, or follows the tanks. We determine what routes the tanks will use, where they meet the infantry, and what infantry units will be with the tanks, or vice versa. Other items of coordination such as signal, telephone and pyrotechnics, are briefly discussed at this time but not in detail. You will note that all this is done in the planning stage which enables the tank-infantry commanders to be consulted before the operation is ordered.

Immediately after being briefed on





Lt. Col. Turner

*The writer of the following served as Executive Officer of the 812th Tank Battalion during World War II. He has been in Korea for the past year, and since May of 1951 has commanded the 6th Tank Battalion of the 24th Infantry Division.*

The basic principles for the employment of small unit teams apply equally to operations in Korea as in other theaters of operations. The organization of the teams and the missions vary, terrain and mission being the determining factors insofar as team organization is concerned. Particular emphasis should be placed on prior planning and coordination by the units involved. All members of the team must know every detail of the plan. Team training, combined arms problems and rehearsals conforming to the operation planned are very desirable and have been particularly effective when utilized with ROK units. Experience of the 6th Tank Battalion has revealed that infantry confidence in tank fire effectiveness and accuracy increases immeasurably when rehearsals and familiarization training are conducted prior to the actual implementation of the support operation.

When supporting infantry, multiple means of communication and recognition must be established. This battalion has supported ROK units on several occasions and the problem of communication and coordination was naturally greater under these circumstances than when supporting U.S. units. When supporting ROK units the solution reached by this battalion was to have a liaison officer, with a SCR 509 radio, with the ROK command group and Korea Military Advisor at the regimental O.P. and in communication with the tank unit offering the support. This procedure has also worked satisfactorily when the battalion supported U. S. infantry, however, the liaison officer was located at battalion level. In addition, prearranged signals using various pyrotechnics are used to mark the front lines of the infantry units and to signal for or lift supporting tank fire. All advancing units should also use panels to indicate leading elements.

Conditions in Korea are such that normally infantry units in the attack are advancing on terrain that is mountainous and impassable to tanks. The

tanks assisting the advance, fire from the valleys below. When it is necessary for the infantry to pass beyond the tanks due to the terrain, the tanks should move as close to the objective as possible and still give supporting fire on the forward slope and, if conditions permit, the reverse slope of the objective. Tank fire from the front of the advancing unit to the objective (normally hill or mountain peaks or ridges) is essential and is perhaps the most effective fire support infantry units receive. This is particularly true if the M46 tank mounting the 90mm gun is used in the reduction of mine fields, antitank guns or obstacles. This should be accomplished as taught under current Armor teaching.

Each tank company should have a minimum of one tank dozer when performing missions of patrol, attack or support. On armored reconnaissance patrols, infantry support is not necessary unless the terrain in which the operation is to be conducted is unfavorable for armor employment. Tanks are a primary mortar and artillery target of the Communist forces and unnecessary infantry losses are sustained if they ride, or accompany the tanks on an armored patrol. If it is necessary to take and hold a pass or defile, clear a mine field or reduce antitank defense in order for the patrol to accomplish its mission, infantry is essential.

The primary obstacle to employment of armor on any operation in Korea has been the Russian type box mine which is used by the CCF. In this connection, present detection equipment is not satisfactory. As an alternative, probing by engineers has



Lt. Col. Byorum

the proposed operation, the tank-infantry commanders get together and make a *personal* reconnaissance of the proposed operations area. They drive over all routes (sometimes with light tanks) and walk over as much of the terrain as the enemy situation permits. These areas are also studied from maps, observation posts, aerial photos, and the battalion L-19 spotter aircraft. Upon completion of these preliminaries, the *tank-infantry commanders* get together and work out the detailed plans for the operation. This method allows each commander to commit his units so as to exploit their capabilities most effectively. These plans are then studied by the higher headquarters and coordinated and the operational order is issued.

The battalion in all cases follows the field manuals. We operate these tank-infantry teams exactly as taught at the Armored School. The tactics we will not discuss as we are concerned only with the Technique of Employment. Situations determine tactics. The above system works best and is the one most often used, but as I have said, the situation also has a lot to do with it.

I have also seen this method used. The tank commander and infantry commander are standing on a hill. Infantry commander says to tank commander, "We take this territory." The tank commander says, "I can attack there." Infantry commander says, "I can attack through there." Tank commander says, "Let's go!" Planning, coordination and field order, all in the space of five minutes and few words. It worked! They took the objective!

LT. COL. CHARLES G. TURNER



had to be resorted to, which is laborious, too slow and in many cases not practical.

In the attack, when the final objective is reached, the tank units should, if terrain permits, cover the infantry organization of the objective, preferably in front of or to the flanks of the objective. On defense, part of a tank company may be placed in the main line of resistance. However, in this connection, the integrity of the platoon should not be violated. The balance of the force is maintained as a mobile reserve to be used in connection with any counterattack plan for the sector.

The tank unit should assist the infantry in the evacuation of wounded

wherever possible, providing the tank mission is not interfered with. On numerous occasions this unit has evacuated infantry casualties without loss of tactical efficiency. This has been particularly true when the tanks were withdrawn because of darkness, to refuel or resupply with ammunition.

Experience has revealed that support missions increase the volume of high explosive ammunition expended. Units of the battalion have used as much as 3 to 4 basic loads of HE ammunition in one day, and as a result, attention must be given to selection of ammunition resupply points and stockpiling of HE ammunition prior to the start of the support mission.

LT. COL. HENRY M. BYORUM

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*The writer of the following served as a rifle company commander in the 29th Division in World War II, from Normandy to VE Day. A 1948 graduate of The Armored School, he assumed command of the 140th Tank Battalion of the 40th Infantry Division upon its call to active service, taking it through Japan and on to Korea.*

Some time ago there existed a popular notion that Korea was not "tankable" country. This idea was promptly expelled after North Korean forces invaded the southern half of the peninsula, and the cry went out for tankers to lend their might in the fray.

The tank-infantry team is yet another victim of negative thinking on the part of some commanders. Many excellent examples of proper teamwork exist, of course, but they usually occur under good to ideal terrain situations. Far too often a tank-infantry team in the attack degenerates into tanks operating in the vicinity of an infantry unit, with a vague mission to fire somewhere.

Since most of the northern section of Korea is extremely mountainous, the only terrain suitable for tanks is the valleys and their branches. The enemy digs in well, with his main positions sited well within these mountains and usually protected by a ring of lesser positions on surrounding hilltops. Many of these positions can be covered effectively by tanks probing into these fortified areas. Tanks cannot seize these positions,

but they can lend material assistance to the infantry and reduce its casualties.

To mount a tank-infantry team attack successfully in this difficult terrain requires more than the usual amount of advance planning, with command attention given to the most minute details. The warning order should be early, giving a tentative task organization, and the mission and area of operation, in order to allow careful study of the terrain by tank commanders and infantry squad leaders. Normally the task organization should be relatively heavy in tanks, with only enough infantry to accomplish the mission. Plans for the attack and the attack itself should be conducted as any normal operation against a fortified position.

Aerial photos and good contour maps should be studied in detail to

develop the plan for isolation of the objective, firing positions for each tank section, and exact routes of the infantry all the way to the objective. Plans should include a primary and alternate means of communications between tanks and infantry, and normally commanders should be together. The objective in the planning phase should be to fix the operation in the minds of all participants so that little or no control is required after the operation starts. Rehearsals are recommended for this purpose when conducted over similar terrain or on improvised sand tables.

A successful operation would consist of three distinct phases, neatly dovetailed to complement each other, and to pave the way for the capture of the objective by the infantry with little effort and a minimum of casualties.

First is the preparatory fire phase, where all available artillery, mortars and air soften the target area, knock out guns and OP's, and carry out the isolation of the objective by fire. This phase may be omitted on occasion, but always use everything you can get.

Under the cover of these preparatory fires the tanks move in and take up the fire. Some support artillery may then shift to defiladed target areas upon which tanks are unable to fire. Tanks should attempt to work well around flanks and rear of the the objective to isolate the battle area further and place fire on all known and suspected OP's, gun positions and bunkers on a prearranged plan. While this isolation and neutralization process is being conducted, tankers must be bold and aggressive, but always remember to have tank cover tank and section cover section.

During the tank neutralization phase the infantry moves forward under cover, using previously selected draws, ravines and ground folds. When the last cover is passed the infantry should proceed with all haste to seize the objective. Often the preparatory fires and tank fire will have driven the enemy from the objective into caves or adjacent concealed positions. Now is the infantry opportunity, and the least delay in the assault can be costly. Tank fire should continue on the objective until the infantry is within hand grenade distance. The CCF



Lt. Col. Reagor



forces open fire with automatic weapons at 30-50 meters, so our forces must be willing to close in under tank fire. The infantry should wear identification panels on their backs so tankers can identify the leading elements readily. Some tanks should be on call to squad leaders to fire on targets of opportunity as they advance. One tank per squad of infantry is a good arrangement in a direct support role.

Lessons from Korea would indicate that when we depart from the norm in operations, we tend to discard proven doctrines, to our discredit. Better that we realize that our doctrines are sound and effective, and that the degree of our success is directly related to the amount of effort we expend in their application to the less favorable conditions we find in Korea.

LT. COL. ELMER C. REAGOR

*The writer of the following was integrated into the Army following World War II. He has had service with both horse and mechanized cavalry, and has commanded the 245th Tank Battalion of the 45th Infantry Division since shortly after that organization was called to active service in 1950.*

We've all dreamed of being the veritable military genius who has compounded a new set of principles for the employment of tanks with infantry—principles so effective, so clever, so different that they will revolutionize this whole business of the tank-infantry team. But the more I observe and participate in tank-infantry operations the more suspicious I become of the fact that there is a strong likelihood that such a revolution is not at hand. So in this article I am not going to expound new principles, or current ones either, other than to state in passing that tanks in Korea are doing very nicely, thank you, with the plain old issue-type principles available to anyone with access to the manuals.

Rather, I would like to make random notes of a few things that have impressed me, and that I hope will be of at least some small interest and value to the reader. For instance:

Much has been written about the trafficability of paddies with the major



LT. COL. THROCKMORTON

emphasis on the lack of traction. In our sector we have another problem—that of wide, deep, vertical walled drainage and irrigation ditches. Bridging them would be no problem if one could get bridging material to them, but one can't. Easily, that is. We simply whittle them down to our size with TNT by blowing the shoulders off to make a negotiable slope for the tank to descend into the canal and another to enable it crawl out. In order to avoid going into a "column of sitting ducks" to cross the canals, we blow as many crossings as possible over each one.

That brings up another point. As the engineers go, so go the tanks, is

often the case here. In our case we refer habitually to the tank-infantry-engineer team.

In assaulting steep hills, the tanks, from positions at the bottom, can give the infantry almost unbelievably close fire support as the infantry advances. That is if the tankers know precisely where the infantrymen are. A solution is panels on the backs of leading infantrymen. Can't the enemy see the panels too? Sure he can if he is fool enough to stick his head up in the face of tank fire delivered at 200-300 yards range to look. Generally he isn't. It's sort of up to the infantry concerned. You put on your panels and take your chances.

Frostbite is a real bugaboo to tankers in extremely cold weather when they are forced to remain cramped in an unheated tank for long periods. From a prior over-all record of one superficial case, our cases skyrocketed with ten more during one prolonged operation. For some reason eight of the cases were gunners. The medics had several theories, ranging from the relatively cramped quarters of the gunner in the M4 to the fear complex manifesting itself more violently in the gunner, who couldn't see "what was going on" as well as the other crewmen, with a resultant constriction of the circulatory system. Be that as it may, don't overlook any bets on preventing frostbite.

Rehearsals are a must if time permits. We pulled one operation with infantry of another UN outfit; a non-English-speaking one, incidentally. Communications went haywire, and for a longer time than was comfortable the right hand didn't know what the left was doing. However, the mission was accomplished because we had rehearsed the job with them prior to undertaking it.

By striking from the unexpected direction and at the unexpected place tanks can gain surprise. We got a company right smack into an enemy position that way—but heaven help the next fellow who tries that particular route, because it's no longer a surprise one. A few days later friendly infantry patrols found that during the interim the Chinese had mined it—profusely and haphazardly with those ducky little hard-to-detect box mines they have.

LT. COL. J. M. THROCKMORTON

**ARMED  
FORCES  
DAY  
MAY 17th  
—  
UNITY  
STRENGTH  
FREEDOM**



# The Top Command in the Far East

United States forces in the Far East have developed from the weak occupation units of two springs ago into the blooded army of today. In the course of twenty-two months of action, we have seen many changes of command. Much publicity has attended the service of several of the commanders. But while the recall of General MacArthur, the capture of General Dean, the deaths of Generals Walker and Moore, were in the news, perhaps less was known of the command jobs turned in by many more of our outstanding soldiers—Generals Church, Gay, Barr, Ruffner, Soule—to mention only a few. In the thought that professionals around the world would like to see the command picture rounded up for them, ARMOR sets out the chain as it stands at the moment. This review of the command structure in the Far East is in itself an indication of our capabilities in a critical area of the world today.—THE EDITOR.

Next issue:  
Top Command in Europe  
U. S. Army Photos

## FAR EAST AND EIGHTH ARMY COMMANDERS



Gen. Matthew B. Ridgway  
Commander in Chief, Far East Cmd.



Gen. James A. Van Fleet  
Commanding General, Eighth Army

## THE CORPS COMMANDERS



Lt. Gen. John W. O'Daniel  
Commanding General, I Corps



Maj. Gen. Willard G. Wyman  
Commanding General, IX Corps



Maj. Gen. Williston B. Palmer  
Commanding General, X Corps



Maj. Gen. Clovis E. Byers  
Commanding General, XVI Corps

ARMOR—March-April, 1952



## THE DIVISION COMMANDERS



Maj. Gen. Thomas L. Harrold  
CG, 1st Cavalry Division ✓



Maj. Gen. John T. Selden  
CG, 1st Marine Division



Maj. Gen. Robert N. Young  
CG, 2d Infantry Division



Maj. Gen. Thomas J. Cross  
CG, 3d Infantry Division



Maj. Gen. Lyman L. Lemnitzer  
CG, 7th Infantry Division



Maj. Gen. Henry I. Hodes  
CG, 24th Infantry Division



Maj. Gen. Ira P. Swift  
CG, 25th Infantry Division



Maj. Gen. Daniel H. Hudelson  
CG, 40th Infantry Division



Maj. Gen. James C. Styron  
CG, 45th Infantry Division



## SOVIET ARMOR TACTICS

# The **SEELOW** Operation

*On January 12, 1945, the Russians launched a major attack along a 450-mile front extending from East Prussia to the Carpathians. With new armor and plenty of motorization, the Russians in three weeks rolled up to the Oder River, last major defense line before Berlin. The Battle of Germany began as they crossed the Oder. Reducing that picture from the strategic to the tactical level, the series of historical examples of Russian armor tactics, launched in the last issue of ARMOR, picks up the German view of action in the Seelow-Kustrin area east of Berlin. The author of this action covering the Panzer Division Muencheberg defense of Seelow is a Captain of the Armored Command who for obvious reasons desires to remain anonymous.—Ed.*

## PRELIMINARY ATTACK ABOUT KUSTRIN

**I**N early March of 1945 the Russians concentrated heavy forces both east and west of the Oder River, flanking the city of Kustrin. They had brought forward a large number of tanks and moved them across the Oder on makeshift bridges, assembling on the western bank.

German forces were still holding the inner core of Kustrin, and the recently activated and weak Panzer Division Muencheberg occupied both sides of the Seelow-Kustrin highway with orders to prevent a Russian breakthrough toward Berlin. The German forces could use this highway only at night.

In the Muencheberg's sector, the division's armored battalion, which consisted of one medium and two heavy companies, had been disposed along a broad front for the purpose of fighting off the anticipated enemy tank attacks.

The armored battalion was organ-

ized with a reconnaissance platoon of five Mark IV tanks; a 1st Company with twenty-two Mark IV tanks; and a 2nd and 3rd Company with fourteen Mark V tanks; the total of 27 Mark IVs and 28 Mark Vs gave the battalion a grand total of 55 tanks.

The terrain in the sector was completely level, offering no obstacle for tanks.

Around 0600 on March 22 a vigorous and intense artillery barrage began throughout the sector, lasting approximately an hour and a half. Under its protection the Russians attacked along a broad front. They soon penetrated the weak German front lines with strong armored forces. When they encountered the German armored battalion, the infantry attacking with the tanks were stopped by its defensive fire.

Approximately fifty tanks advancing south of the highway were driven back by the 1st Company. A second wedge of approximately fifty tanks

by-passed Gorgast and was hit in the flank by the 2nd Company.

A similar force further north advanced on Golzow, where the 3rd Company and the battalion staff had withdrawn from the village only with great difficulty as a result of the intense artillery fire. The Russians placed a smoke screen across the eastern edge of the village. German tanks trying to escape this found themselves in action at close range with the Russian tanks.

The Russians broke off the attack after losing about sixty tanks shot out of action. Only the superior command and flexibility of the German armored battalion repulsed the attack.

### Lessons

The cooperation between the Russian tanks and artillery was correct and exemplary. The use of the smoke screen was perfectly synchronized.

The combination of all armored forces and their simultaneous advance on a broad front was correct. Whether an echelon in depth had been planned could not be ascertained from the Ger-



man side. Since no breakthrough was achieved, rear echelons could not be brought to bear.

The obvious objective of the tanks—Seelow heights—was the right one.

The attack by the northern elements on the village of Golzow was faulty. It would have been better to by-pass it under the protection of the smoke screen, especially in view of the fact that the Russian infantry had not kept up.

It was wrong also for the German tanks to stay in Golzow. When strong artillery fire is anticipated, tanks must be dispersed over the terrain.

In the type of situation here, and with the open terrain, the broad disposition of the armored battalion was correct. Two companies were up front, with one to the rear, with the staff, as a mobile reserve, either to come to the aid of one of the front companies in an emergency or to fight off a penetration. The tanks were employed as mobile antitank guns, a procedure which best insures a successful defense and saves losses when the enemy has complete superiority.

## MAJOR ATTACK EAST OF BERLIN

**F**OR several months during the early part of 1945 the Russians had been assembling forces in the area about and to the north of the city of Küstrin preparatory to launching a major attack on Berlin, thus striking a decisive blow to end the war. Their combat activity during this period was slight except for the attack discussed in the previous example, aimed at gaining the heights near Seelow.

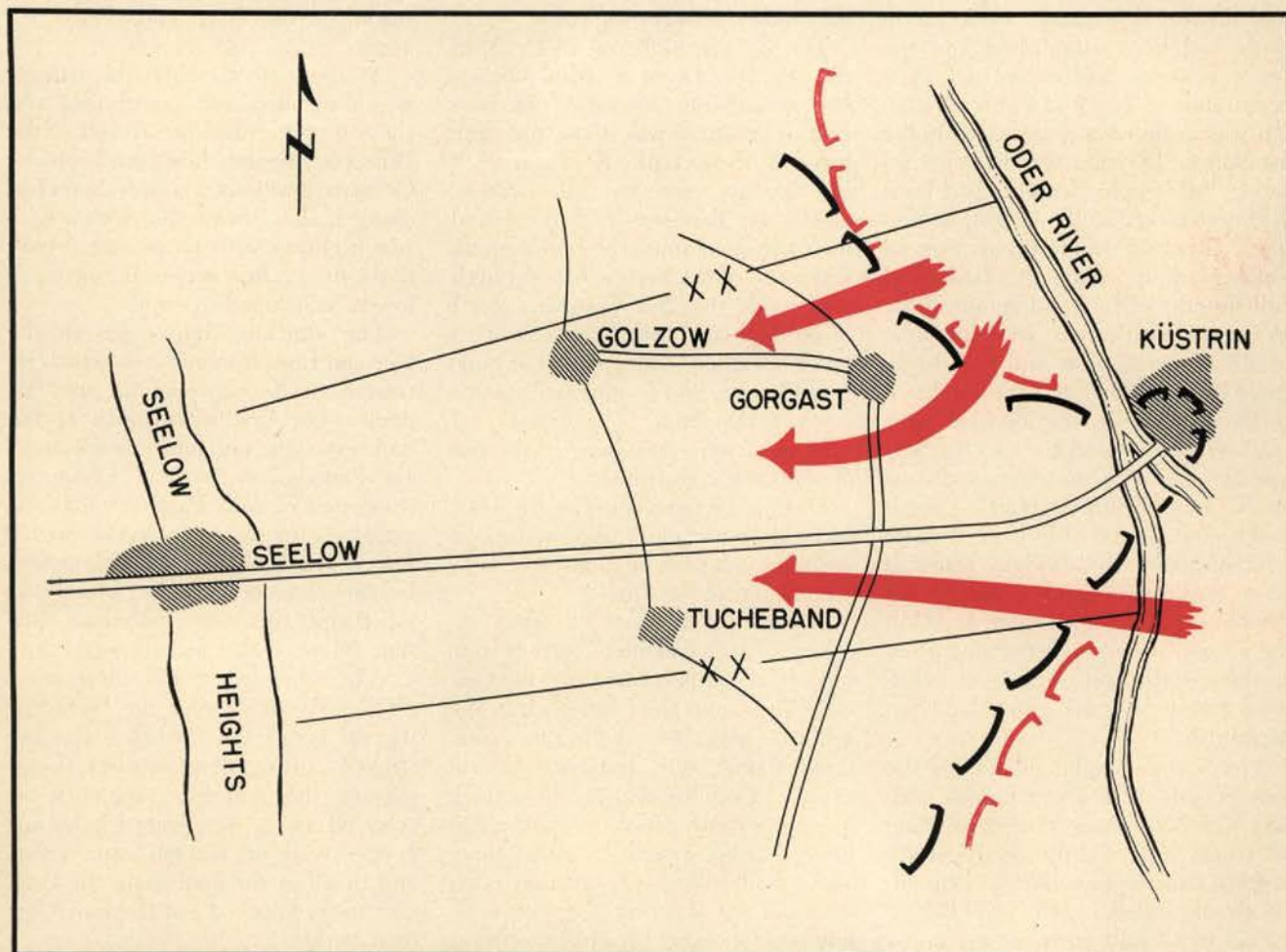
At the time of the attack described here, the Russians had between five and ten times the amount of troops employed by the Germans in the same area. Their superiority of matériel—in tanks and artillery, but even more in planes and ammunition—was still greater. Morale of the Russian units was high as a result of the victories they had achieved. The tactical command was strict and flexible.

On the German side, the Panzer Division Muencheberg had been activated early in March of 1945. The

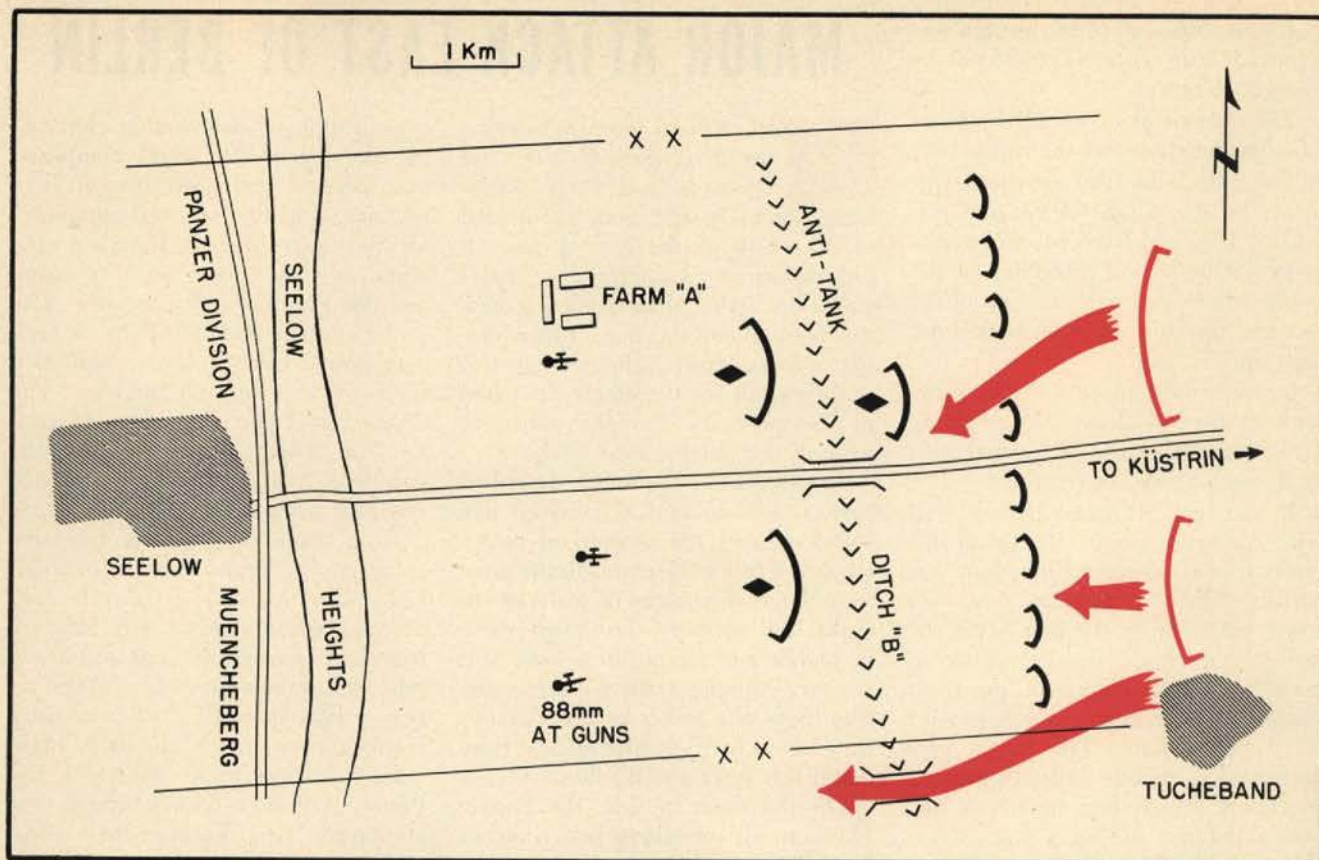
organization of the combat elements on the day of the attack comprised two infantry regiments, one artillery regiment and two armored battalions. Of the latter, the 1st Battalion consisted of one Tiger tank company and one Panther tank company. The 2nd Battalion had two Panther tank companies, one of them equipped with night firing equipment. The division had also an antitank battalion, of which one company was equipped with 88mm guns, and two engineer companies.

As a result of previous defensive action and several unsuccessful counterattacks, combat strength had dropped considerably. The infantry was short of machine guns and heavy arms; all units were short of ammunition. The morale of the infantry regiments was not particularly high.

In the corps sector in which the Panzer Division Muencheberg was employed, two Volksartillery corps were committed in addition to nor-







mal divisional artillery. Observation posts had been established and the firing batteries had completed their registrations. The 2nd Panzer Battalion was in division reserve, while the 1st Panzer Division was in corps reserve. All supply elements had been withdrawn behind the heights at Seelow. Infantry ammunition was in limited supply, while the tanks had full supplies of fuel and ammunition. Wire communication was complete to all command posts and was duplicated by radio down to battalion level.

The terrain in the division area was completely level back to the Seelow heights, with no cover, and traversable by tanks throughout. A ditch had been constructed into an absolute tank obstacle, and bridges across it were tank proof and prepared for demolition. A high water level in the ground throughout the area limited the construction of positions. Outlying 88mm antitank guns could not be dug in.

The Seelow heights dominated the area. Upon them a continuous position had been built, the second line of which was lightly occupied by supply and replacement personnel. On the slope down to the level below, a road block had been set up across

the Seelow-Kustrin highway.

During the night of 14-15 April, the Panzer Division Muencheberg had moved into position. The front line of infantry was about one mile forward of the tank "B" ditch. Backing this up were the tank elements of the 1st Battalion. Of the battalion's two companies, the 1st Company was south of the Seelow-Kustrin highway, with the 2nd Company north of the highway, both behind the tank proof "B" ditch. One platoon of tanks (1st Platoon, 2nd Company) was forward of the ditch. The 88mm anti-tank guns were positioned to the rear of the tank companies.

During daylight hours of the 15th, major movement and improvement of positions was prohibited due to enemy observation of the area.

Around 0400 hours on April 16, a heavy Russian artillery barrage from guns of all calibers blanketed the German lines from the front back to the artillery positions. Telephone communications were immediately disrupted. Visibility was cut by a thick fog and a steady stream of shells. The heavy barrage lasted for about three and a half hours. Observation posts were put out of action. German artillery positions were hit. Russian planes

made American-style raids on the rear areas.

At about 0730, while the artillery pounding was still continuing and the fog prevented all visibility, the Russians opened their attack on the German positions. It was launched along both sides of the Seelow-Kustrin highway with an estimated sixty tanks in the first wave. Infantry followed, echeloned in depth.

The attacking tanks overran the German front-line infantry, which retreated in disorder behind the "B" ditch. The first wave north of the highway then ran into the advanced 1st Platoon of the 2nd Company, comprised of four Panther tanks. At extremely close range approximately fifteen Russian tanks were destroyed by the platoon, and the attack was repelled at this spot. Following Russian infantry also was stopped.

While the platoon was still fighting off the Russian tanks, the bridge in its rear across the "B" ditch was destroyed, cutting off its retreat. To aggravate the situation, the platoon received several hits from the friendly 88s. With the platoon leader killed and in all of the confusion, the Russian tanks knocked out the four German tanks.



Russian units attacking south of the highway and from the town of Tuchebed also ran into the defense positions and the tank proof ditch. The southernmost group, however, in a surprise raid succeeded in capturing the bridge across the "B" ditch in the sector of the adjacent division.

An endless stream of Russian tanks, guns, infantry and trucks began to pour across this bridge, visible in the clearing atmosphere, and moving toward the positions on the heights. A counterthrust by the 1st Company was repelled by enemy tanks covering the bridge. Limited German ammunition supplies restricted the action.

Friendly artillery made no move against this mass target. Radio messages from tanks requesting artillery support were disregarded. The long Russian artillery barrage, the incessant air raids on rear positions, perhaps some Russian infiltration under cover of the fog—all of this brought complete elimination of the observation posts and thoroughly neutralized the numerically superior German artillery.

During the morning the German tanks were withdrawn to positions in the area of Farm "A." By noon the infantry had abandoned the ditch line and had moved back to the line formed by the tanks.

The road block on the slope below Seelow was closed, prohibiting the recovery of damaged tanks.

In the afternoon the enemy in company strength attacked Farm "A" from the northeast. They were repulsed by the tanks.

In late afternoon, division gave orders to withdraw the tanks to positions on the heights, which was accomplished by nightfall.

The Russians had achieved a penetration in the sector of the division to the left and had occupied the heights. The 2nd Battalion, covering the left flank, was ordered to counter-attack after dark, along with the company equipped for night firing. Its action did not materially relieve the situation.

In the early hours of darkness, Seelow, which had been shelled and bombed into ruins by the Russians in a single day, was abandoned as untenable because of penetrations to the north and south.

**THE RED  
ARMY TODAY**  
by Col. Louis B. Ely  
\$3.50

**SOVIET ARMS AND  
SOVIET POWER**  
by Gen. Augustine Guillaume  
\$3.50

#### Lessons

In the first phase of the battle, one bridge over "B" ditch was demolished too soon, while the second was not demolished at all. Demolition of a bridge should be executed only on the order of the commander in charge of a sector, who must maintain close contact with all units, and must post a sufficiently strong detail at the bridge under an officer to prevent seizure by surprise action.

German positions in this action were not echeloned in sufficient depth. The Seelow heights should have been prepared and occupied as the main line of resistance, with the bulk of the troops along with heavy arms and tanks positioned on this dominating terrain, leaving light forces forward on the plain for direct contact with the enemy. Even as the action went, battleworthy troops rath-

er than supply and replacement personnel, should have formed the reserve.

The 88mm guns would have been far more effective from the heights than in their advanced positions on the plain, where almost all were lost due to premature closing of the road block.

It is difficult to explain the failure of the artillery, despite the tremendous enemy air and artillery action. Probably it had not been echeloned in sufficient depth, no alternate observation posts had been explored and occupied, and radio did not function properly.

Road blocks should be handled in the same manner as the demolition of bridges.

The moment that the Russians succeeded in securing the bridge at Tuchebed was the latest for withdrawing to heights positions. This is an example of flexible tactics. Here the decree that any withdrawal of the front must be approved by higher headquarters instead of the appropriate division or corps commander in the sector is far from wise operation.

The Russians employed their forces properly in combination. Their flexibility was correct as well, as demonstrated by the immediate exploitation of the successful raid on the bridge at Tuchebed, following which all units were diverted to this path in their attack for the heights.

The Russians made a mistake in committing tanks in the first line during a fog and against a strongly occupied defense position. The principle that infantry should attack in front of tanks and under their immediate protection is particularly valid during fog or darkness.

On the German side, tanks should not have been held across the "B" ditch, but should have remained behind it while infantry security parties maintained direct contact with the enemy. The bridge across the ditch might well have been demolished prior to the Russian attack, with only emergency infantry gangways held open.

As the superiority of the enemy became known, the infantry should have been withdrawn to the ditch and all forces pulled back into the main line of resistance in anticipation of the effort of the enemy to secure the heights as a main objective.



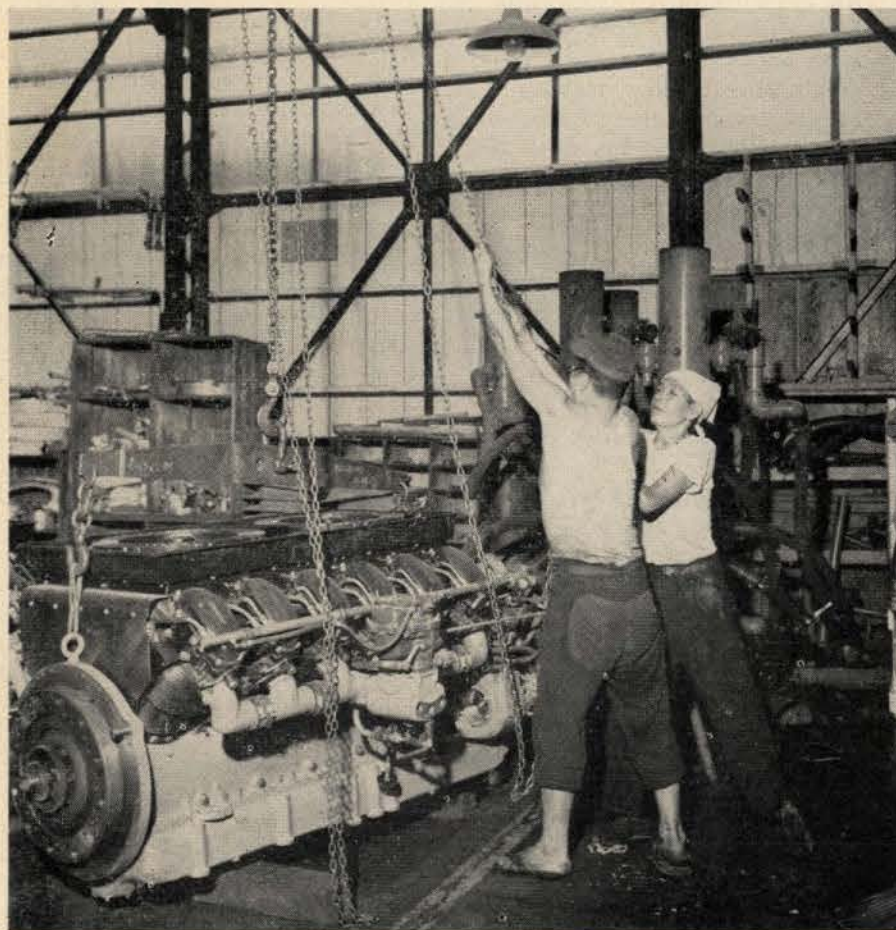
**Hermann Burkhardt Mueller-Hillebrand**, former generalmajor in the German Army, is the topic chief on this series of examples of Russian armor tactics. He had early cavalry experience in the German Army, and in April 1942 was appointed Chief of the Organization Division of the Army General Staff. In 1944, after a brief tour as commander of the 24th Panzer Regiment, he was assigned as Chief of Staff of the XXXVI Panzer Corps in the Ukraine and Poland, later moving up to CofS of Third Panzer Army. He served in France, Italy and on the eastern front during World War II.



# TANK REBUILD . . .



A pile of junk? Battered Patton tanks shipped in from battlefield recovery in Korea arrive at the Tokyo Ordnance Depot. Rebuilt, they will emerge to fight once again.



In the engine shop at the depot workmen handle a Continental tank engine. Japanese personnel comprise the labor under supervision of Army Ordnance experts.



At the Tokyo Ordnance Depot of the Japan Logistical Command, largest Ordnance depot ever established in an overseas area, American mass production "know-how" and abundant Japanese labor are performing production miracles every day. One of these miracles puts wounded tanks back into action.

When a knocked-out or damaged tank arrives, Japanese workmen and women completely disassemble it. Component parts and major assemblies are inspected, identified, and sent to the appropriate shops to be individually rebuilt before being assembled into a "new" tank.

Take the engine for example. Subassemblies, such as carburetors, pumps, starters, generators, distributors, etc., are removed from the engine and completely overhauled in the Carburetor and Ignition Shop. Parts are cleaned chemically, mechanically, or by hand. The moving parts are buffed, ground, built-up by metalizing, and then reground to size. Some parts are then given an oil coating, while others are painted before being stored in the proper bins to await the start of their second life span. The engine block is overhauled, including reboring or resleeving when necessary, valves are reset, and pistons, connecting rods, and crankshafts are refinished and balanced.

At the same time the engine is being rebuilt, canvas and leather items are being reconditioned, new parts manufactured in the foundry, fire control instruments repaired, and guns renovated.

Putting a tank together is just about the same as in Stateside arsenals. As the tank hull moves slowly along the main assembly line, component parts flow in from arterial lines at the sides. Sparks shower the area as welders put on the finishing touches.

After a final inspection, tanks are checked out on a rugged test course. When last-minute adjustments are completed, the tank is given a new coat of O.D. paint, accessory and spare parts boxes are banded on the tank deck—and a "new" tank has been born.

Every day two Patton tanks are completed. And the cost is less than \$700 each. Back in the States a price tag on a new Patton tank would read \$245,000.

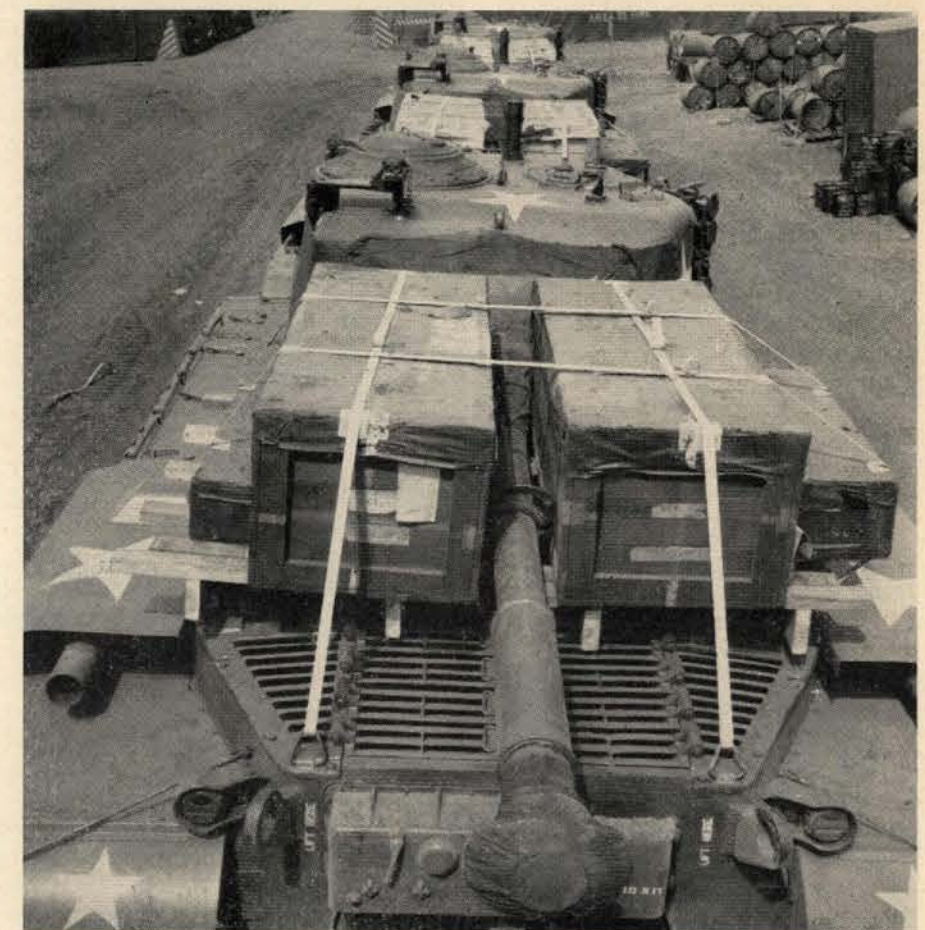
When the "JLC Rebuild" nameplate is attached, it means: Another tank is ready to fight again in Korea.—CAPTAIN A. D. BRUCE, JR.



# . . . IN JAPAN



Small assemblies are broken down and component parts segregated into their proper bins. After cleaning and rebuild they will be reassembled by the workers.



Completely rebuilt Pattons with all accessories packaged stand ready at the Tokyo Ordnance Depot for reshipment to Korea to resume their interrupted task.



*The battle effort of the armored division hinges on the teamwork of its combined arms and is the result of the cumulative effect of its many platoons. Here is a story describing the means for attaining the end*

## Combat Training for the TANK-INFANTRY TEAM

by COLONEL JOHN L. RYAN, JR.

**O**N 9 October 1951, Major General Bruce C. Clarke officiated at the opening of the 1st Armored Division's "Tank-Infantry Platoon Combat Course." Situated in the rolling terrain of the north portion of the Fort Hood reservation, this unique training device solves one of the many complex problems confronting commanders of armored units—how can tanks and armored infantry train together under reasonably realistic combat conditions?

Designed by General Clarke and constructed with a combination of contract and soldier labor, the course presents a series of tactical situations to a "team" consisting of one tank platoon and one armored infantry platoon supported by artillery and fighter-bombers. Service ammunition is fired by organic weapons of the platoons; the artillery shoots both point detonating and time fire; only for the air strike, in which "bombardiers" of the Division Air Section drop smoke grenades on the target, is substitution used.

Built into the course are several of the situations encountered in combat. Artificialities and umpire control are

### TANK-INFANTRY COMBAT COURSE

PURPOSE OF THE COURSE IS TO TEACH:

- 1-COOPERATION BETWEEN TANKS & INFANTRY.
- 2-USE OF ARTILLERY & OTHER SUPPORTING FIRES.
- 3-CONTROL OF UNITS & THEIR FIRE.
- 4-TECHNIQUE OF COORDINATING AN ATTACK.
- 5-METHODS OF TANK-INFANTRY ASSAULT.
- 6-FIRE & MANEUVER.
- 7-COMMUNICATIONS WITHIN & BETWEEN UNITS.
- 8-USE OF ARMORED PERSONNEL CARRIERS.
- 9-PREPARATION FOR COUNTER-ATTACKS.
- 10-THE HASTY DEFENSE OF TAKEN OBJECTIVES.
- 11-TECHNIQUE OF EXECUTION OF BASIC—TACTICAL PLANS.
- 12-KEEP UP MOMENTUM OF THE ADVANCE.

"THE BATTLE EFFORT OF  
THE DIVISION IS THE CUMULA-  
TIVE EFFECT OF ITS MANY  
PLATOONS."

Some of the purposes behind the course.

held to an absolute minimum. Any deficiencies in individual training, troop leading, communications or coordination of effort are disclosed automatically for although the course is essentially a training facility it is a natural testing medium; weaknesses in training cannot be hidden.

Average time for a team to go through the course is two and one-half hours. The course itself occupies less

than two square miles of the reservation; however, the required impact area is large. Fortunately there is sufficient area at Fort Hood to permit firing the 90mm tank gun at moving targets. To insure all-weather operation, some 13 miles of trails have been constructed. These trails also provide a safety feature in that vehicular movement is guided in the proper direction.

As background for the exercise, the tank-infantry team is told that it is right flank guard for a Combat Command which is moving to seize a communications center some thirty miles away. Hostile opposition thus far has been light. The advance guard of the Combat Command has been driving back enemy covering forces of infantry and a few tanks supported by intermittent light artillery fire. The exercise opens with a message to the flank guard commander that the main body is halting to refuel; the flank guard is to halt but be prepared to resume the advance on order. The flank guard has reached point "A" shown on the map.

The flank guard commander (the senior platoon leader) after a quick reconnaissance establishes his own local security by deploying one rifle squad and the light machine gun squad on hill "B," and one section of tanks covering the roads leading to

Colonel John L. Ryan, Jr., is Chief of Staff of the Armored Center, Fort Knox, Ky., a recent assignment which follows a tour with the 1st Armored Division.



"A." The remainder of the force is halted in the woods at "A." As the rifle squad deploys on "B" it is informed that it is being fired on by enemy machine guns located about midway from "C" to "E."

Inasmuch as the enemy guns appear to be dug in, the flank guard commander decides to have one section of tanks, using high explosive shell, knock out the hostile weapons. The machine gun positions are represented by small mounds of earth. The rifle and machine gun squad leaders are told which particular mound is the target. Two tanks move to firing positions on "B" and the infantry points out the target with tracer. Each tank fires three rounds of HE, and hits are scored. For training purposes two more tanks move up and the infantry marks a new target.

As the tanks are firing, the flank guard commander is ordered to resume the advance. Having been fired on he decides to cover his advance by moving through the woods to his right and advancing to the high ground at "C." The machine gun squad is left on "B" as a base of fire until "C" is secured, and to fire at likely automatic or antitank weapons positions on "C" while the advance gets under way.

The woods through which the flank guard is to move are quite thick so the commander directs the infantry platoon (less the base of fire) to sweep the woods, dismounted, ahead of the tanks. Upon reaching the clearing between "B" and "C" the tanks are to pass through the infantry and move rapidly to defiladed positions on "C." After passing through the infantry the tanks reconnoiter by fire with their coaxial and bow machine guns. The infantry follows the tanks quickly to mop up if "C" is occupied. When the objective is secured the machine gun squad left on "B" as a base of fire rejoins the infantry platoon on "C."

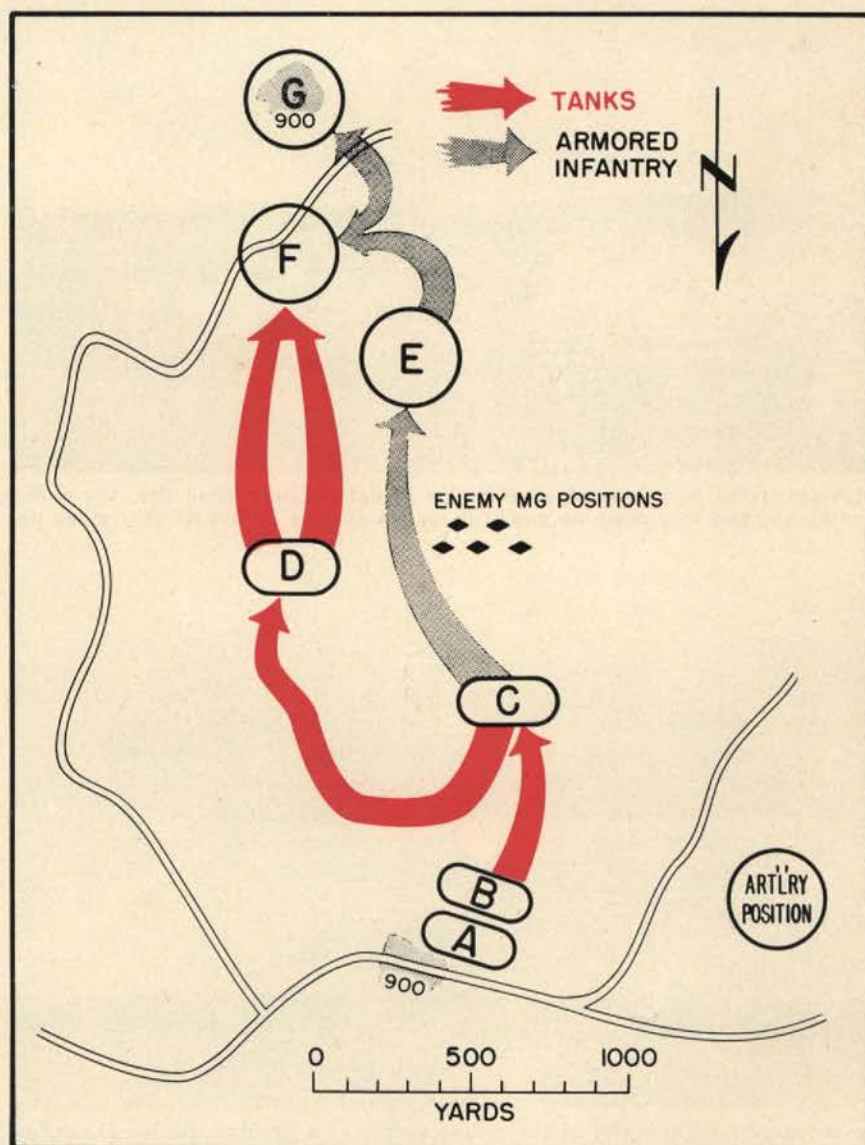
After the tanks arrive on "C" a charge is set off to represent the fire of a hostile antitank gun in position on hill "E." Location of the gun is disclosed by its muzzle blast, so the flank guard commander requests an artillery concentration on the hostile position. Upon being informed by his forward observer that the artillery is committed to another mission the commander asks Combat Command for an air strike on the antitank gun. This request is approved.

The target is designated and liaison planes of the Division Air Section, representing fighter-bombers, dive on the target and drop smoke grenades simulating napalm. The flank guard commander meanwhile has made a study of the terrain and decided that he must secure the dominating ridge at "E." The tanks are to move by a defiladed route to firing positions at "D" from where they will support the infantry assault; this move will serve also to divert hostile attention from "C." The forward observer reports that the artillery can now provide a four-minute concentration on "E" if desired. The infantry, mounted in its personnel carriers, is to move rapidly to the base of "E" under cover of artillery fire and the automatic weapons of the tanks.

When the tanks move out from "C" the infantry platoon leader calls his

personnel carriers forward and mounts his platoon. As soon as the tanks reach their positions on "D" the flank guard commander, through the forward observer, calls for the artillery concentration on "E." The tanks open fire with their automatic weapons and the infantry, covered by tank and artillery fire, makes a mounted dash from "C" to the base of hill "E."

As the infantry moves, in line formation, over the rolling terrain between "C" and "E," the .50 caliber machine guns on the personnel carriers are fired at the objective. Safety regulations require lifting the tank and artillery fire before the infantry reaches the base of hill "E," consequently the infantry platoon bails out of the carriers when the supporting fires cease and, using marching fire of rifles and light machine guns, assaults "E."



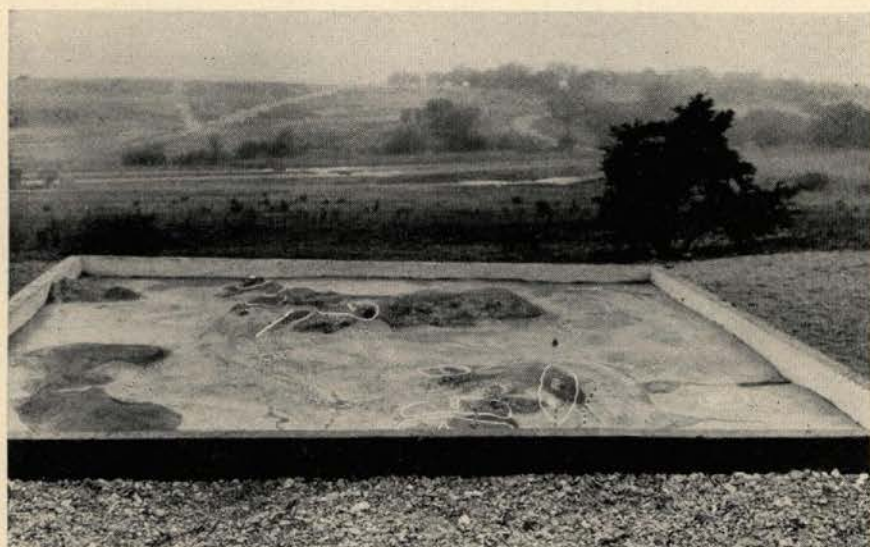




A hostile tank platoon, represented by target sleds travelling about 12 mph, is taken under fire by friendly tanks from D while the infantry assaults E.



Moving to the high ground at F under actual artillery time fire, the tanks use coaxial and bow machine guns for reconnaissance by fire as they move up.



An oriented terrain model of the course serves as a briefing aid for the crews prior to running it and as a critique aid of great value for crews at the end.

During the infantry assault on "E" a hostile tank platoon, represented by tank silhouettes on sleds, moves out of the draw between "E" and "F." These targets, travelling at about twelve miles per hour, are taken under fire by the tanks in position at "D." Each tank is allowed one round of armor piercing shot for each target. Hits and distribution are scored after the targets disappear behind an embankment east of "D."

Having disposed of the enemy tanks, the flank guard commander decides to move his own tanks to the high ground at "F" in anticipation of further enemy action from that general area. To cover the tank advance, artillery time fire on "F" is requested, and is actually put on the objective directly over the tanks. The tanks again use their coaxial and bow machine guns for reconnaissance by fire as they advance. When the artillery lifts its time fire, the infantry mounts and moves to "F" to assist in organizing the position in event of hostile counterattack. As the infantry goes into defensive positions, simulated hostile small arms fire is received from hill "G."

Because "G" is too steep for tanks, the flank guard commander decides to move his infantry, by a concealed route, to an attack position west of hill "G" where the terrain is more favorable for dismounted action. The tank platoon becomes the base of fire. The infantry moves in its personnel carriers behind heavy woods west of the objective, dismounts and moves to the east edge of these woods to launch the assault. The tanks cease firing on signal from the infantry platoon leader. The exercise terminates when "G" has been seized and organized, and the flank guard commander has issued his order for continuing the advance.

From the foregoing, it might appear that the entire course should be covered in much less than two and one-half hours. The time is consumed by having the platoons do everything expected of a well-trained unit in combat. Reports to the next higher headquarters, coordination of fire plans, disposition of vehicles, plans and orders for the next move are all checked on and recorded. Simulated casualties are not assessed but probable casualties are noted. Platoon leaders are given "situations" and "re-



quirements" at "A," "E," "F," and "G" while the troops are organizing the objective. Every minute of the time is filled with planning or action, or both.

It has been suggested that the course is "canned" and thereby eliminates the exercising of tactical judgment by the two platoon leaders. The purpose of the course is to teach the things shown on the signboard. Basic tactics can be taught in a classroom and in the usual field training periods without firing. The platoon leaders are asked how they would take the next objective, but are then directed to execute the plan on which the course is constructed. This insures proper tactics and safety from the beginning, leaving to the platoon leaders the myriad details involved in executing such a plan. Today's platoon leader must know more about combined arms fighting than did a battalion commander in World War I. This course emphasizes and teaches the technique of combined arms action. It should be remembered that a golf course is fixed but very few ever break par even though they know every foot of it. Very few get superior on this course.

In addition to training in tank-infantry-artillery teamwork, there are several by-products which should be mentioned. En route from "C" to "D" the tanks have to cross trestle bridges while the crew, except the tank commander, is buttoned up. The personnel carriers in moving from "E" to "F" to "G" have to negotiate several tricky spots and the .50 caliber machine guns are fired while the vehicles are moving. The artillery location is such that the participating troops, and for POR requirements extra men in trucks following the infantry platoon from "C" to "E," are subjected to overhead artillery fire. Time fire is placed directly over the tanks on "F" thus giving the crews complete confidence in their ability to withstand such fire without harm to themselves or their vehicles. There are bayonet dummies on top of "G" that must be attacked in the final assault. All men are given experience in "Battlefield Manners" as applied to handling and firing loaded weapons under stress of simulated but realistic combat conditions. Drop-type small silhouette targets are concealed on all objectives; these are scored to determine how well fire is distributed on likely hostile

## Artillery Lacing It In On The Korean Front



U.S. Army  
Battery B of the 937th Field Artillery Battalion, a unit of the Eighth Army in Korea, fires its Long Toms on Communist targets in support of elements of the 25th Infantry Division. Picture was taken last November.

firing positions. Either platoon leader may be the flank guard commander but the requirements are solved jointly, thus teaching the principle of teamwork.

Safety requirements are enforced through a Chief Control Officer situated where he can see most of the course, an Assistant Control Officer with each platoon and an Artillery FO with the infantry platoon, all linked together by radio. A field telephone connects the control tower on "B" with the bunker where engines are installed to pull the moving targets; incidentally, these engines are surplus captive-balloon equipment and pull the enemy "tanks" at twelve miles per hour. Furthermore at each objective there are four yellow and black "barber poles," spaced twenty-five yards apart, ten feet high and topped by a yellow arrow, which mark the axis of advance; when parallel with these arrows it is safe to fire. Lastly, the platoon leaders coordinate their fire plans and maneuvers before moving to the next objective.

Before starting the course, the platoons are briefed at a terrain model, special emphasis being given to safety measures. As of this writing, 116 pla-

toons have been through this training and, despite the considerable amount of activity and firing, only three men have been injured (none seriously) and one tank periscope destroyed. Immediately following the exercise a critique is conducted during which both good and bad points, and hits on targets, are discussed. Performance of the platoons during each phase is evaluated and an adjectival rating is given. Finally the over-all effectiveness of the "team" is evaluated and rated. The competitive spirit has been high. It will be noted that most all the common methods of tank-infantry cooperative approach to an objective have been built into the course.

Designed primarily for training in combined arms action at platoon level, the course can accommodate a tank company and an armored infantry company simultaneously. Although the initial cost might be considered a bit high by some, if the course saves one-half a tank in battle it will have paid for itself. Officers and men recently returned from Korea have been unanimous in saying, "I wish I could have had this training before going into combat."



# HOW WOULD *You* DO IT ??

AUTHOR: MAJOR DAVID T ASTON

ILLUSTRATED  
BY  
M SGT W M CONN

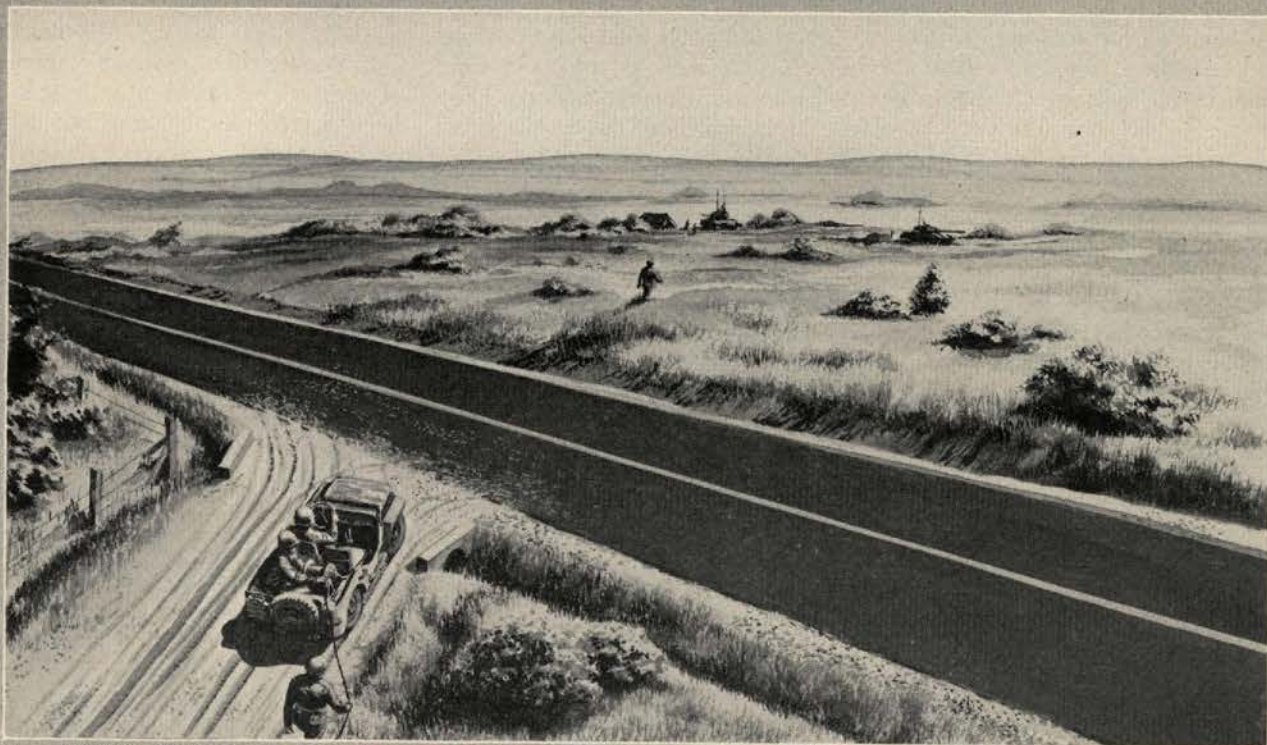
## FOREWORD

In communication, as in all military matters, success is dependent on a complete utilization of all resources available to the commander. In this respect, effective communication is linked with economy-mindedness, for economy is not a matter confined solely to the preservation of equipment; it depends ultimately on the ability of the commander to make full use of the time and labor as well as the personnel and equipment available to him. Most important, however, are the resources within himself of common sense and a determination not to neglect the tested procedures and principles that are fundamental to his operation. Economy begins with a state of mind, and the following problems will enable you to discover, in part, if you have it.



**SITUATION 1.** You are a tank commander. Your company is advancing in column on a road when your driver tells you on the intercom that the engines are overheating and that you will have to pull out of col-

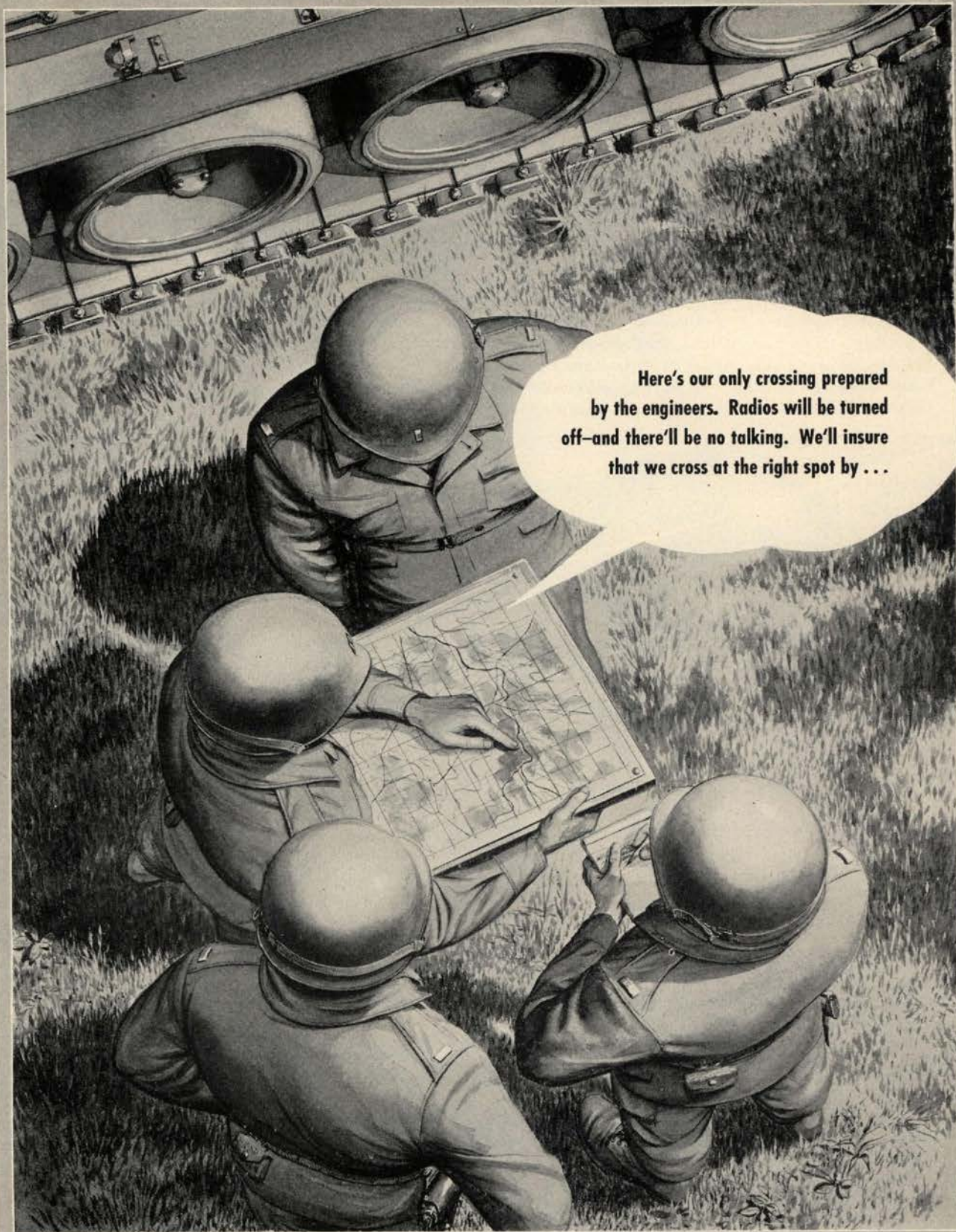
umn. You must take action to prevent disrupting the orderly progress of the column as you pull out of position to the side of the road. How would you do it ?



**SITUATION 2.** You are in a barren, bushy country. Your company CP is located about 100 yards off the east side of a black top road. A crew comes into your area laying wire from the battalion switchboard about two miles down a dirt trail to the southwest. There are no trees, buildings, or materials of any kind with

which they can construct an overhead. The blacktop road has moderate, wheeled-vehicle traffic but is "off limits" to track-laying vehicles because of its comparatively soft surface and importance as a future MSR. The crew chief asks you how he should cross the road with this wire. What would you do ?





**SITUATION 3.** As a tank company commander, you must ford a small stream in the approach to a before-dawn assault. Since surprise is of great importance, radio silence and "no talking" have been ordered. Therefore only visual means of communication are left

to you. A one-spot crossing has been prepared by the engineers. You must insure that each tank will make the crossing at the right spot with minimum delay and confusion. What would you do?





**SOLUTION TO SITUATION 1.** The orderly, coordinated movement of a column on the march is especially vital to armored units. Good march discipline minimizes or prevents any action which would disrupt this movement. Though it tends to be neglected, the correct use of arm-and-hand signals and flags is an in-



dispensable part of this preventive discipline—is good economy. As the panels above show, in the given situation you would display the orange flag from your vehicle flag set. Then, as you pull well off the road, you would signal to the vehicle that follows you: Pass and keep going.



**SOLUTION TO SITUATION 2.** When a hard-surfaced road must be crossed, and no other method is applicable, as a last resort the wire may be laid on the road by laddering. The ladder is made by splicing a length of twisted wire to each side of the circuit in the manner shown and by laying the wires across the road—without slack—about 10 feet apart. An occasional check to make sure that the wires remain taut

would add a measure of precautionary economy. The ladder device, though an expedient, saves not only delays in communication, but also the time, manpower, and materials involved in the frequent repair trips that are the result of laying a single line of wire across the road. This measure is merely a simple means of multiplying the chances for avoiding a broken circuit.



**SOLUTION TO SITUATION 3.** At critical locations, post guides with luminous markers on the front of their helmets, and provide them with flashlights, the lenses of which have been covered by the blackout filter, M384. By thoroughly orienting each driver and

tank commander as to the position of the guides and the nature of the crossing, effective control can be maintained. Economy is also a matter of forestalling delay and confusion by using the simple, yet effective, devices that are available for use.



# Three Civil Wars of 1934

*In reading this account of history in our time it is difficult to conceive that the events described could possibly have happened—yet further consideration leads inevitably to the recognition that equally appalling things can and do happen today. The compensation lies in the fact that today we are awake. An active war against aggression on one side of the world and concerted diplomatic action on the other will go far toward whipping the world's bad boys into line*

I

**E**NGELBERT Dollfuss became Chancellor of Austria in 1933, and from the very first, showed himself opposed both to the German Nazis and to the socialists at home. This tiny fellow, with the broad face of a peasant, was extremely religious in feeling, and heartily disliked the Marxian city-machine in Vienna. Facing Hitler (also come to power in 1933) abroad and the Viennese "heretics" about him, the wee new Chancellor found himself forced to depend increasingly on Mussolini, the Pope, and Italy. Dollfuss made a fetish of the Austrian independence threatened by Hitler's Germany, but his clerical convictions estranged him from his logical allies, the local socialists.

"The best explanation of why Dollfuss decided to destroy Austrian socialism, wipe out the constitution and republic he had sworn to defend, and accept Italian tutelage," wrote a keen international observer, "was that Mussolini, and Mussolini's Austrian agents, the Heimwehr, forced his hand. If he did not accept Mussolini, he had to accept Hitler. There were other reasons. Dollfuss hated the socialists; their chief spokesman, Otto Bauer, had consistently treated him with intellectual contempt; their citadel in the capital city was a constant reminder that one day an election or a general strike, or even an armed uprising, might push him off the stage. In his hatred of the socialists,

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by DR. ROGER SHAW

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it is fair to say, Dollfuss was entirely true to the tenets of his own Christian-Social party as conceived by his predecessor, Monsignor Seipel, who never forgot that socialism was an anti-Catholic force and that its program was always achieved at the expense of those Austrian elements which were the backbone of his

church and party . . ."

In the spring of 1933, the socialist *Schutzbund* militia was outlawed, but the reactionary *Heimwehr* was not. The Viennese could detect which way things were drifting as the Dollfuss central government became increasingly threatening, and tightened its dictatorial grip on what was ceasing to be a republic. By this time they knew their little Chancellor, nicknamed "Millimetternich"—under five feet in height, a former student of theology, later an oversmart lawyer, but with agricultural and banking experience, and a good 1914 war record.

Dollfuss had an able lieutenant for what was coming. He was the Commissioner of Public Safety, and his name was Major Emil Fey. Fey had a hatchet-face, and was an experienced soldier and polished orator. He looked better than Dollfuss. A Paris journalist wrote of the Major, "Though he speaks well—clearly, energetically, soberly—he seems to be doing one a favor by speaking at all. He takes no part in the speech he makes. His mind is obviously on something else. He thinks intensely. It is rare to see so intelligent a face above a uniform—thin, firm lips that scarcely move. The words 'Communist' and 'Bolshevist' fuse into a hiss; the hands remain motionless.

"Suddenly the character before us comes to life. Now, after the exposé of cold facts, he must explain the Heimwehr. Fey, the robot, begins to



live, even to smile. His gestures come back to him. He takes a cigarette, snaps a silver case, opens his mouth wide, pauses with delight on certain vibrant words. He is the leader goading his soldiers. With what magnificent pride he exclaims at the end: "Without the Heimwehr, Austria is lost!" Fey was then a close associate of the extraordinary turncoat Prince Starhemberg, and the pair became the funeral executives of Herr Dollfuss against a doomed Vienna.

For Vienna was doomed, and this time not by the Prussians, but by the professional *anti*-Prussians. Another Frenchman observed: "Vienna's tragedy was that it had its adversary in its own palaces of government. Almost all the Chancellors, ministers, and prefects of police who lived in Vienna were non-Viennese. Representatives of the provincials and peasants of Austria, they fought to establish a new Vienna, struggling to bring the city into a state of dependence on the countryside, as if to prove that History had abandoned it as a metropolis and made it into a modern Venice that had outlived its day."

So came about the first Austrian civil war, with Mussolini actively approving it, and Hitler neutral. Things moved swiftly.

At the end of January, 1934, the Tyrolean Heimwehr began to stir uneasily, mobilizing 8,000 men, and demanding a local dictatorship to suppress "dangerous" socialism. From Tyrol, with its clerical population, the Heimwehr unrest spread through the other Austrian provinces, and the country militiamen started to seize public buildings, to rouse fratricidal feeling, and to isolate "red" Vienna. Dollfuss, at this point, took an official trip to Budapest, saying that he would deal with the Heimwehr on his return.

This left Commissioner Fey in control of things. Among his other positions, he was Austrian Vice-Chancellor. Fey raided the offices of Vienna's socialist newspaper, the *Arbeiter Zeitung*, and closed it up indefinitely. The *Arbeiter Zeitung* was a celebrated local institution, and this high-handed procedure outraged the city workers. The socialists threatened a general strike against Fey and the rebellious Heimwehr, and the perplexed Dollfuss returned from Budapest, where he had been con-

ferring with the sympathetic Hungarian dictators. Said Fey to the Heimwehr: "I have made certain that Dollfuss is with us. Tomorrow we are going to clean up Austria."

"Tomorrow" was February 12, an ironical sort of Lincoln's birthday. The socialists had delayed their general strike, but disorders broke out at Linz in the province of Upper Austria. Here socialists clashed with the local Heimwehr formations, preparatory to the main act.

In the Austrian capital there were four days of fierce fighting. Fey, brain-truster of the attack, mobilized the Heimwehr, the regular army, the police, and peasants from the countryside, with heavy artillery and other siege machinery. The workers, in their great municipal tenement houses, put up a determined resistance with sporting-guns, old World War rifles and machine guns, or even with bricks. Socialist women fought beside their menfolk. Relentlessly, the howitzers shelled the tenements and workers' clubs of Vienna. In vain, socialist leaders tried to arrange a truce as the lethal hostilities continued. Some three hundred were killed, and of these, twenty-two were women and small children. Julius Deutsch, the commander of the *Schutzbund*, was badly wounded and escaped into Czechoslovakia. So did the radical socialist chieftain, Bauer. The revered Burgomaster Seitz was jailed, with hundreds of others. Fey and Starhemberg kept the hangman and the firing squad busy with the socialist survivors. Here was the bloodiest, nastiest European "incident" perhaps since the Paris Commune of 1871.

Dollfuss said he was "saddened, and surprised." Only 5,000 Viennese workers had taken part in the fighting, but they became heroes to history. The 30,000 Austrian army regulars, twelve-year professionals, later lost at Stalingrad, were disgusted by their task. Not so the Heimwehr, Italian-subsidized, of Fey and Starhemberg. As to the 1,200,000 socialist voters of Vienna, they were unable to express an opinion under martial law.

Austria, and Vienna, received a new form of government, certainly not republican, but based on a papal encyclical of 1931: *Quadragesimo Anno*. It was strongly clerical, and

dictatorial, anti-socialist, and based on the "unified, all-party" Fatherland Front which was to meet, eventually, an unlamented end. The Austrian Nazis laughed at *Quadragesimo Anno*. They could afford to, for they had remained out of the first civil war, and were, so far, unscathed by combat.

The Austro-Nazis had observed a strict neutrality under their Inspector General, an obscure figure named Theodore Habicht, who spent much of his time in exile at German Munich. From Munich he would broadcast over the Austrian frontier by radio. Habicht hoped, frankly, that the Heimwehr and the socialists would kill one another off, and so make way for an Austrian-Nazi regime. One of the Nazi journals declared at the time: "After the guns Styria, Linz, and Graz, the surround had ceased firing in Floridsdorf and Simmering (Viennese districts), in ing nations faced a changed situation. The Franco-Czech base in Austria had been destroyed. Whereas Italy, on the one hand, and France on the other had balanced each other in Austria, this balance has been destroyed, and the Austrian problem was further complicated in the eyes of all those powers that were eager to intervene. Domestically, the situation of Dollfuss was more precarious than ever. Before the week of bloodshed the majority of the people had gone over to the Nazi camp. . . . The bloodguilt of the Dollfuss government was clear and could not be denied."

Although the Nazis had wrecked the strong socialist machine in Germany, they entertained a respectful, and even friendly, feeling for the stout "Andreas Hofers" of Vienna. The situation of Herr Dollfuss was more precarious than ever. His jails were full. An English visitor reported that she "noticed on a prison wall the *Three Arrows*, and asked the policeman innocently what it was. He said, 'Oh, the socialists make that,' but seemed unconcerned. We went into one or two cells full of Nazis and found they had scribbled swastikas and Heil-Hitlers all over them. One noticed the difference between the cheerfulness of the Nazis and the gloom of the socialists." The Nazis were looking ahead; the socialists were "through."



**T**HERE was once a mythical King of Flanders named Jan Primus. He invented beer, so the story goes, and is generally portrayed astride a barrel, with a stein in his jovial paw. He was the guild-master of the Flemish brewers, beloved by each and every happy tippler, and his name became corrupted into Gambrinus. This ruddy non-Hapsburg monarch was very popular with the Viennese in the spring season, although he had passed on to Valhalla in the thirteenth century. Between bloody February, 1934, and the summer, Vienna people communed with Lord Gambrinus, his bacchic goats, and his carefree malty cult. They tried to quiet their shattered nerves while Dollfuss sweated in the Chancellery. But the Austro-Nazis would not let them forget, despite Gambrinus' best efforts and those of the Dollfuss police.

The Austrian brown shirts, who in reality were in the habit of wearing white socks for a uniform badge, agitated against Dollfuss, threw bombs, committed acts of sabotage, and created disorders in places of public amusement. They behaved childishly, but effectively. They were, in increasing numbers, joining the unfortunate socialists in the Dollfuss prisons, where they were generally better treated than the captured Viennese workmen.

On July 24, 1934, Alfred Frauenfeld—an Austro-Nazi associate of Habicht's in Munich—broadcasted from a German radio station that there would be a civil war in Austria if any one group of seven Nazis held by the Dollfuss government were executed. Next day came the second Austrian civil war.

Some 154 Nazis, four truckloads of them, suddenly seized the Chancellery at lunchtime. They belonged to "Standard Eighty-nine," Section VIII, of the Munich general staff of the Nazi movement, but they were skilfully disguised as Austrian regulars in the uniform of *Deutschmeister Regiment Nummer Vier*. Their leaders were Planetta and Holzweber.

The Nazis captured Dollfuss and Fey in the Chancellery. Little Dollfuss, in terror, reached for the handle of a secret door, but Planetta shot him in the back at a range of one foot. His captors fortified themselves in the Chancellery, refused to admit

medical aid, and within three hours the "Millimetternich" bled to death on a hideous, flowery yellow sofa. Major Fey attempted to bargain with the Nazis while his chief lay dying and crowds gathered outside in the street. His real attitude toward the July coup has never been perfectly clear.

Meanwhile, fourteen more Nazis, armed but well dressed as civilians, captured the studio of the Austrian Broadcasting Company, killing one policeman, one chauffeur, and one Heimwehr man. They pushed their revolvers into the frightened radio announcer, and ordered him to broadcast that Dollfuss and his government had resigned in favor of Dr. Anton Rintelen, Austrian ambassador to Italy and a Nazi sympathizer. (Rintelen had close business and other connections with Germany, and was the Nazi candidate for Austrian Chancellor.) Then for three hours the Nazis in the station fought the police outside. "It can't be Austria—it must be *Nicaragua*," cried out a horrified observer.

The Chancellery and radio station were recaptured by Heimwehr and police, and Otto Planetta and others (promised a safe-conduct to Germany) were shot. But the defeat of the Nazis in Vienna was followed by nearly a week of country fighting in the south of Austria. In the capital city it had lasted barely three hours, but in the Styrian and Carinthian provinces the Nazis put up a prolonged resistance. The Styrian Protestants, opposed to the clerical Dollfuss regime, were strongly pro-Nazi, and in some instances their storm-troops were led by the local pastors.

There were active Nazi sympathies among the Styrian iron miners as well, and these grimy strong men gathered in the workshops, equipped themselves there, and produced weapons that had been concealed in mine-shafts, galleries, warehouses, and abandoned blast furnaces. Pro-German Dr. Rintelen was a Styrian himself, and the Styrian mines were closely connected with German capital. In this case, management backed labor, and so did ownership, against the Dollfuss regime.

An English correspondent wrote home: "It had been an open secret for some time that the *Alpine Montangessellschaft* was the focus of the

Nazi movement in Styria, and partly so in Carinthia. This, the most important coal, iron, and steel company of the Austrian Federal State, had been owned for the past ten years by the principal German iron and steel combine. The directors, high officials, clerks, and engineers of the company were Nazis. Miners who were members of the socialist party had been gradually discharged and their places taken by Nazis, and the same thing happened to the furnace and rolling-mill men, and to other workers in the various plants of the company."

The *Alpine Montangessellschaft* enjoyed what tended toward a monopoly on Austrian coal and iron. Its Erzberg iron mountain, thirty miles from Styrian Leoben, was more than 4,500 feet tall, a solid mass of high metallic quality. The Romans mined it when the Danube was their northern frontier and Vienna was Vindobona. As to the magnificent Erzberg, and post-war Germany, "one of its principal defense problems was its lack of iron ore. Even before the 1914 World War, Germany produced only fifty per cent of her own requirements of pig iron; the other half had to be imported from Sweden, Algeria, Spain, and so on. After the war, Germany lost the important Lorraine iron mines (gained by Bismarck in 1870), which had supplied almost eighty per cent of the iron ore extracted in Germany. The loss of the Lorraine mines greatly increased the importance of the Erzberg mines to Germany. In 1924 the United Steel Works, the Duesseldorf combine, obtained the controlling interests."

After the July civil war, the German managing-director of the *Alpine Montangessellschaft* was removed by the Austrian government. His name was Dr. Anton Apold. His successor—"conflicting magnates do not shoot each other, they only expropriate each other"—was a leading Heimwehr man named Joseph Oberegger. He was appointed State Commissioner for the mining company, with absolute powers. The unlucky Apold and his Nazi son-in-law were fined half a million schillings by what was left of the Dollfuss regime. Some 300 Nazi-minded employees were discharged, to be replaced by "reliable" Heimwehr labor. Others were in prison, or safely across the Yugoslav border.



For Yugoslavia sympathized with the Austro-Nazis, and offered them a haven from the Styrian theater of civil war. They flocked over the line, as the Nazis from Vienna were trying to escape into friendly Germany. Dr. Rintelen attempted suicide, and went to the hospital with a bullet wound in his head. Germany's control over Austrian iron was virtually canceled, and this made iron-shy Germany exceedingly indignant. Economics were now joined with racial ties in the burning desire for Austro-German union. Nazi, and Essen capitalist, saw alike in the matter.

A good-looking, youngish war veteran succeeded the dead Dr. Dollfuss. The new Chancellor of Austria was Dr. Kurt Schuschnigg, son of an old Austrian general, with a religious education, an aristocratic *Von* —, not a sharp peasant like Dollfuss. Schuschnigg was to Dollfuss, what Dollfuss had been to Seipel. He carried on the Dollfuss policies of Austrian independence, clerical rule, and anti-socialism. He was forced to be a trifle antisemitic in order to compete with the vociferous Austro-Nazis, yet some of his loyal backers were wealthy Vienna Jews who feared worse the Austrian annexation planned by Hitler. Although Herr Schuschnigg came from Austrian South Tyrol, taken by Italy after the war, his sympathies were with Pope and Mussolini, rather than with Prussian Germany.

Schuschnigg retained Fey as Commissioner of Public Safety. Fey filled the Austrian concentration camps, kept the executioners busy, and in the spring of 1938 committed suicide, first having murdered his wife and child. Schuschnigg was not too fond of Fey. . . . After the first civil war period, Burgomaster Karl Schmitz succeeded Burgomaster Karl Seitz in municipal control of Vienna. They called Schmitz, "the man who stole the capital." He was an anti-socialist administrator in a socialist city, a Jew-baiter, pompous and generally disliked. He filled the great city tenements, partially damaged by the February bombardment, with "black" clericals instead of "pink" workmen. Religious education became virtually compulsory in the public schools, to the disgust of "modern" or agnostic parents. Only *Schlamperei*—"sloppiness," native to the soil—mitigated the new Austrian dictatorship.

### III

**B**UT Germany itself was not spared a civil war in 1934, sandwiched in between the two Austrian ones. It was generally called the "blood-purge of June 30."

The issues were confused, but basically it was a struggle as to whether the Nazi storm-troops, in their brown shirts, should control the reorganized Prussian army, or whether the Prussian army should control the brown shirts.

Ernest Roehm, commander-in-chief of the brown shirts, was shot at Munich under Hitler's eye, shouting at the Chancellor to the very last: "There is only *one* traitor here, you as did Gregor Strasser, who had joined faker, and that is *you!*" Karl Ernst and Edmund Heines, other storm-troop chieftains, met a similar fate, the Nazi movement even before Hitler. Former Chancellor Kurt Schleicher and his wife, and Dr. Erich Klausener of the Catholic-Action group, suspected as enemies of Hitler, met summary deaths. Prince August William Hohenzollern and Vice-Chancellor Papen were arrested. No Jews or communists were molested in any way; this was a *family* row.

Apparently Hitler was visiting in Westphalia when Goering, in alarm, phoned him from Berlin. Goering told him that the discontented storm-troopers—many thousands of them were about to be "laid off"—were planning to stage a coup and seize the government buildings in the capital. Hitler leaped into an airplane and flew to Munich, where he settled accounts with his old comrade, the personally disgraceful Captain Roehm. Goering, meantime, had a free hand in Berlin where he laid it on with a vengeance.

But as commander of the storm-troops, Roehm had been eager to secure sway over the regular Prussian army. Hitler and Goering sided with the Prussian Junker generals against the overweening ambitions of Roehm and the result of "June 30" was that the humbled, frightened brown shirts became a servile adjunct of the Great General Staff and the regular soldiers. At the time there were close to 2½ million storm-troopers, some of whom the generals sent home demobilized, while they found others useful material. It was convenient to link the deceased Roehm and Schleicher, him-

self a Prussian general from Brandenburg, with an "international" French plot to overthrow Nazi Germany. The Prussian army, however, had no hand in the shooting of the storm-troopers. That fierce work was accomplished by Heinrich Himmler's special Elite police, wearing funeral black uniforms.

"Roehm died yelling and shrieking, with the uninterrupted cry of 'I am innocent,' without using the revolver thrust at him—even if only against his murderers; he, who had organized political murder a hundred times, ordered it and almost glorified it cynically as a natural necessity, a soldier's trade—he cried, foaming at the mouth: 'What is being done to me is political murder.' But he was frightened by the revolver.

"Ernst who, beaten half-dead and wounded, was brought by airplane from Bremen to the terror barracks in Berlin-Lichterfelde, fell to his knees before the firing squad and begged for mercy; 'Heil Hitler!' he shouted, 'I am innocent.' Heines shrieked so much that he could be heard right through the whole Brown House in Munich . . . Strasser, while still alive, was trampled to death in the forest of Grunewald, near Berlin. The only 'man'—if one is to believe certain reports—who, faced by the murderers, found words of open protest and fearless retaliation, was a woman, the wife of the non-Nazi General Schleicher; the next moment she was lying with a bullet in her brain."

The above were *communist* comments. But reading between the lines, June 30, 1934 was a first, indirect victory for the reorganized postwar Prussian army, en route to Poland by 1939. Meanwhile the Hitler purgings continued, and during 1936—an "average" year—the following arrests were made: 864 communists, 417 trade-unionists, 286 socialists, 153 socialist-radicals, 22 opposition Nazis, 141 members of the "Society for the Study of the Bible," 38 priests and pastors, 17 radical Catholics, six storm-troopers, and a motley collection of "race-polluters, and others lacking in pride" as Nordics and anti-semites. There were, in all, sixty concentration camps then in Germany, holding 25,000 political or racial prisoners. Kid stuff, as compared to the Soviet Union in *this* Year of Grace.



# FROM THESE PAGES

## 60 Years Ago

If accurate and important knowledge has always been necessary for the commanding officer, it is more so than ever at the present time and from a purely tactical standpoint, for the introduction of smokeless powder must prove a very essential factor in conducting an offensive engagement. Hitherto, the commander's personal observation of the progress of the battle, in addition to the important information furnished him, has been sufficient. Upon the basis of the information possessed, and of a personal examination of the enemy's dispositions and observation during the period connecting the beginning of the battle and the attack, he formed his plan of assault. But now with the disappearance from the battlefield of the smoke which so well revealed the dispositions of the enemy's artillery (traced by the line of its fire) and made it possible to see the progress of the battle upon the flanks, the commander can trust very little to personal observation, and must begin the fight and conduct it almost up to assaulting distance upon the basis of information received from the outside. It clearly follows that at the beginning of a battle more than at any other time it is necessary to have a sufficient quantity of valuable, accurate, and precise information; and that during the battle itself, there should be constant observation of the enemy, which, in its turn, is attained by an organized system of scouts and reports.

*The Organization of Cavalry Scouts*

LT. COLONEL N. KRUSENSTERN

## 25 Years Ago

As cavalymen, we must have faith in the cavalry service, and we must have a doctrine which will allow other branches to see how well we keep the faith. To the cavalry itself, that faith must be sacred. The doctrine must be sound, the faith a natural by-product. If we have faith founded on sound principle, we will have satisfactory *esprit de corps*. With enthusiasm in addition, we will then have morale as a natural result. And "morale is necessary to win battles, or for that matter, to survive the perils of peacetime service."

While having faith in ourselves, we must understand the characteristics of other branches. We must make ourselves as cavalry, indispensable to the team of which all branches form a necessary part, each in its proper sphere. We must make opportunity and we must embrace opportunity. We must not be prone to consider a task impossible of execution, simply because someone has said it cannot be done. We must expect to be expended to the last horse and man in the last extremity. Modern automatic weapons, airplanes, etc., may be used to the advantage of all branches, and they can be used to particular cavalry advantage. Such improvements and inventions are to be welcomed. They make cavalry no less indispensable. Rather, they relieve cavalry of certain work, so that men and horses are not expended unnecessarily, and thus save them for their important duty after reaching the battlefield itself.

*Faith in and a Doctrine for the Cavalry Service*  
"ONE OF THE FAITHFUL"

## 40 Years Ago

Reconnoitering cavalry, either independent or divisional, will profit greatly by the achievements of airships. Where its task is to cross occupied sectors and to drive back hostile advance troops, the airships will show the route to be taken and save the cavalry many a bloody or even useless dismounted action. Based on the results obtained by aerial reconnaissance the cavalry may frequently be able to utilize the night to create for itself conditions favoring an unexpected appearance the succeeding day. The cavalry will be relieved from any onerous reconnoitering duties by aerial vehicles, especially during the march into position, during attack and defense of stream sectors and defiles, attack on permanent fortifications and the reconnoitering of hidden artillery groups and reserves behind the center of the extended hostile battle front. But we must always hold to the maxim that where the decisive operation is to be had, we cannot do without an effective cavalry body which keeps in close touch with the enemy and that at the moment of tactical contact a permanent cavalry reconnaissance of the enemy is absolutely necessary. Aerial navigation can supplement cavalry reconnaissance in the most effective manner; points out the limits to which it can proceed in the reconnaissance profitably, and gives our large independent cavalry bodies an increased importance. The natural consequence of these facts seems that we ought to increase our cavalry and make our cavalry divisions stronger as far as their fighting power is concerned.

*Airships and Cavalry in the Reconnaissance Service*

CAPTAIN NIEMANN  
(Austrian Cavalry)

## 10 Years Ago

Highly mobile ground troops—such as cavalry, reconnaissance elements, the armored force, antimechanized elements and motorized infantry—are cohesively being drawn together simply because of the strategical missions which they perform in common. They speak and understand the same language irrespective of their respective modes of travel and tactical methods.

The Germans appreciating this pertinent fact already have grouped such units under the heading of (*Schnell Truppen*) Mobile Troops. That they have functioned efficiently under such grouping is beyond question.

Mobile warfare demands decentralization in the execution of mobile missions. Decentralization in combat requires the use of well-balanced combat teams. The character of terrain and the tactical situation usually indicate the necessity for *motors plus animals* in order that objectives can be reached regardless of the incidents of terrain, climate and weather.

Balanced combat teams capable of handling diversified combat situations are the result of long-range planning and training. They cannot effectively be created after the battlefield is reached.

*Mobile Force*

EDITORIAL COMMENT



# The *LITTLE THINGS* that COUNT!

by MASTER SERGEANT JAMES D. MERRILL

**T**HERE is nothing new or revolutionary in the observations I am about to make. These tricks of the trade are known to most tankers. I set them down only because it seems that in the long intervals of service between combat periods, these practices are either neglected or forgotten so that each new crop of tankers has to be told again these simple, fundamental truths.

► In night operations, or when occupying positions of proximity to the enemy, the interior lights in both the driver's compartment and the fighting compartment are a real danger unless crewmen take certain simple precautions. Inside the tank these lights seem small (inadequate to read or write by) but a glimmer of red light on a dark night is often enough to guide an enemy patrol directly to your position or enable them to avoid you and infiltrate to other more vulnerable units. The red light on the driver's instrument panel (which indicates whether the master switch is on and also serves as an oil pressure gauge) should be taped over, leaving only a small portion at the very bottom for the driver's use. Many crewmen will reply that they never use the driver's hatch at night, and in most situations this is true. Taping the instrument panel takes care of the once-in-a-while time when you do. The green light on the radio transmitter is another which should be taped. It is located almost directly behind the gun and sights. If the breech of the gun is open—as it should be for quick loading—the green light is telescoped towards the enemy. If the turret lights have to be used, all periscopes must be pulled to the down position, the breech-block closed, the telescope covered, and the hatches closed. Simply closing the hatches does not black out the tank. But don't worry about this. If you forget, the enemy will remind you.

► One of the sleeping positions in the tank is the driver's seat. If the driver has a restless night (and who wouldn't in that position) he is apt to honk the horn accidentally. The sound carries for miles. In my platoon we disconnected the horns on all our tanks to prevent such accidents. Be sure both ends of the disconnected wires are taped to prevent shorting out the electrical system.

► If your Motor Sergeant is an eager beaver, he will have painted the regulation white stars on the outside of the turret. In the early morning, or late afternoon, or on moonlight nights, these stars make excellent targets. They should be blotted out with mud, taped over, or covered with a shelter half or poncho.

► When you have men on guard in the turrets of the tanks at night see that they drape a shelter half or poncho from the .50 caliber mount to the open tank commander's hatch. This eliminates the silhouette of the guard and makes the enemy sniper's job more difficult.

► When your radio must be kept on at night turn the volume down until you can just hear the transmissions or even so low that only the flickering of the amber squelch light indicates that a message is being transmitted. In a night position each tank is essentially a listening post and the radio traffic (which may or may not be important to you) obscures your hearing and may disclose your position.

► The speakers on the face of the radio receivers should be reinforced with tape to withstand the constant blast of the tank cannon. The concussion of these heavy guns over a period of time will eventually damage the speaker unless it is reinforced.

► When selecting positions avoid prominent clumps of trees and try to find defilade in open terrain. Positions of this sort always offer better fields of fire and the possibility of air bursts is reduced. Enemy artillery is seldom effective against tanks but air bursts will cause your men discomfort. If camouflage is an important consideration I would still prefer to go into positions in open terrain and use cut boughs for cover. If this is done don't overdo it. It is not necessary to make a Mardi Gras float out of your tank to break up its characteristic shape.

► Of course you must keep your batteries charged. Make it a part of your daily schedule to charge the batteries just before dark. The "Little Joe" makes plenty of noise so don't wait until things get quiet at night. Many nights you'll be using your radio all night, so be sure the batteries are up before dark.

► If you are in a stationary position (covering some other unit, or a road block) never let yourself feel that since the enemy hasn't bothered you he can't or won't. He may be waiting for you to make the first move. The same thing is true if you are advancing and haven't been fired on. The enemy may be waiting behind his mine field or he may have an ambush set for you. Keep your eyes open and try not to let your mind slip into neutral.

► When moving in column, stay in the tracks of the tank ahead. Usually you're well into a mine-field before a tank hits one. If you're careful you need not lose more than one tank. If you are not



following the tank ahead you may hit a mine that has been by-passed by it.

► Remember, your gun is only muzzle safe so make sure you are not massed by trees, brush, or other obstructions. If it is necessary, clear fields of fire when you occupy the position. A blast caused by trees a short distance in front of the gun wastes ammunition, discloses your position and endangers friendly troops in the vicinity. You can clear a field by using your tracks.

► After a period of sustained firing of the co-axial machine gun, see that your gunner unloads the gun then moves the belt only to the belt feed pawl. This is important because when the barrel becomes overheated, a round in the chamber can be "cooked off." Drivers have been killed in this way. While we are talking about the machine guns, tank commanders should rotate the bow and co-axial guns in order to prevent wear on either. And when there is need for plenty of small arms fire the tank commander should command the fire of both guns in such a way that he always has one gun loaded and ready to fire while the other is being reloaded.

► Tank gunners should be required to keep an allen wrench handy at all times. On some days when you have been firing a lot of ammunition from the tank gun, the oil in the recoil cylinders will expand under the heat and it becomes necessary to bleed the cylinders to permit the gun to return to battery. There is only one allen wrench that will fit the filler plugs and the gunner should have this wrench easily available all the time.

► Each tank crew should make a short handled swab for cleaning out the chamber of the tank gun. After a period of firing, the metal filings, carbon, and dirt that builds up in the chamber will cause a stuck round. With the swab the gunner can easily clean out the chamber between fire missions.

► Policing up the turret immediately after each fire mission is just as important in combat as on the range. The gunner should make it a habit to swab out the breech, refill the ready rack, transfer ammunition up from the bog compartment, check the co-ax, and clear the floor of all spent rounds so that the tank is ready to fire again when called on.

As I admitted at the start, these practices are old stuff but they are still the things which distinguish an excellent tank crew from the ones that just go along for the ride. The tank commander who really learns from experience and avoids making the same mistake twice will make out O.K. Common sense in large quantities and a knowledge of his men and equipment are all a tank commander needs to live to a ripe old age. As Bismarck said, "A fool can profit by his own experience but I prefer to profit from the experience of others." I have tried to put this down the way I experienced it in the hope that some, like Bismarck, might prefer to learn from my experience.

## A Round Trip That Costs More Than One Way

Al is a big guy, but for all his size he was laboring under the load. His mailbag (Al, he is our mailman) was loaded down. Trouble was, the mail that ran to weight was not original stuff winding up a one-way trip. It was a big jag of returned copies of ARMOR, all of them exhausted from the round trip that did nothing more than bring them right back where they started. Reason??? Some folks forgot to inform us of their change of address!!!! And to top it all off, we had to jack open the cashbox and shell out return postage at the clip of two cents a copy. Adding that up for undeliverable copies on one issue, we'd much rather have spent the dough on another illustration for that article that some of you thought looked a little dead. As for the magazines, they looked a little wilted, although we've tried for maximum protection by wrapping them up in an expensive 28-lb. Kraft envelope. And since we try to put a fresh, crisp product into your hands, like as not we'll toss the limp copy aside and send you a new one out of stock . . . always assuming you've let us know where to find you! More dough, and some of yours at that. We figure we've carried out our end of the bargain when ARMOR goes in the mail. To help you fulfill yours we've put a postage-free return envelope in the magazine for notification of change of address. PLEASE?



**Sharp, Uneasy Action  
Of Tanks and Artillery  
Flares on Korea Front**  
By the Associated Press  
SEOUL, Korea, Sunday, Mar. 2.  
—Korea's 155-mile-long battle-  
front quivered with sharp, uneasy

## ARMOR NOTES

**NEW U.N. TANK RAID  
JABS AT KOREA FOE**  
Allies Strike Near Pyongyang  
as the Enemy Hits Back  
With Artillery, Patrols  
SEOUL, Korea, Sunday, March  
—Korea's 155-mile-long bat

### "Impractical" Machine Saving Tank Production Time and Money

An "impractical" machine at Ordnance's Detroit Arsenal is saving the taxpayers \$400 a day, and, at the same time, eliminating a bottleneck in the tank production program, the Department of the Army announced recently.

The civilian chief of manufacturing at Detroit Arsenal, Andrew C. Dickson, is credited with developing a turret broaching machine that engineering experts a few months ago said was impractical. Now, after a year of research and test, Dickson's machine has proven its worth.

The new machine cuts the 294 required teeth in a turret-ring gear in 30 minutes. Former methods took 4½ hours.

The ring gear in appearance is nothing more than a six-foot ring with teeth cut into its inner curve. Fastened to the tank turret, it enables the turret to turn completely around so that a gunner can aim the tank gun in any direction.

In addition to cutting costs and time, the new machine eliminates 75 per cent of the capital outlay and nearly 90 per cent of the machine tools required in the method previously used.

Ordnance officials say the \$400 daily savings will soon skyrocket into thousands of dollars a day, since more of the same broaching machines have been ordered for use by other tank manufacturing plants.

The broaching machine now in use at the Ordnance Arsenal was made by the Colonial Broach Company in Detroit.

### T41 Tanks Tested At Drum

More than a score of T41 light tanks have been undergoing rigorous tests for well over a month at Camp Drum, New York. They have been taking part in winter maneuvers as part of the Exercise Snowfall equipment.

These are a model which has had trouble on turret-turning mechanism. As recently announced by the Army Chief of Staff, difficulties encountered

in the light tank are being ironed out in the production line.

Experts from Fort Knox and from Cadillac division of General Motors, builder of the light tanks, have been on hand watching the performance of the T41's.

This is a part of the testing given the tanks as they undergo indicated modifications.

♦ ♦ ♦

### Explosion Rocks Ford Tank Plant

An explosion and fire recently threatened to wreck the 50-million-dollar tank plant being built by the Ford Motor Company at Livonia, a suburb of Detroit.

The fire apparently resulted from an explosion in a paint shop. Flames swept a large section of the plant.

♦ ♦ ♦

### More Armor For Eisenhower

BRITISH HQ, GERMANY—Hard-hitting 50-ton Centurion tanks manned by three British armored divisions—the Sixth, Seventh and Eleventh—today constitute the biggest tank force at General Eisenhower's disposal.

A fourth British division—the Second Infantry—is also in the line, plus one infantry brigade in Berlin.

The presence of these forces is taken here to illustrate Mutual Security Director Averell Harriman's statement to Congress that Britain already is producing more military equipment than all other European signatories of the North Atlantic Treaty combined.

The Centurion tank, standard weapon of the British Army in Germany, has been hailed by American



U.S. Army

Brig. Gen. John C. Macdonald, who recently assumed command of the Armored Combat Training Area at Camp Irwin, California. Gen. Macdonald has a long experience in the mobile arm, having commanded the first Armored Cavalry unit in the U. S. Army, Troop A of the 1st Armored Car Squadron, 1st Cavalry Division, in the period 1932-1938. During World War II he commanded the 4th Cavalry Group Mechanized in ETO campaigns. He served as Chief of Staff of the Armored Center at Fort Knox, Kentucky, from mid-1947 until early this year.



experts in Europe and Korea as one of the finest fighting machines in existence. Main features include: armor plating from ½"-6" thick, Rolls Royce aircraft type motor, 84mm (3.27) gun with special stabilizer, 7.92mm machine gun, smoke dischargers and two sets of phosphorus grenade launchers.

Maj. Gen. John O'Daniel, Commander of the U.S. First Corps in Korea, recently said goodbye to the 8th King's Royal Irish Hussars after their 13 months in Korea and added: "You, in your Centurions, have taught the whole Eighth Army that even the tops of mountains are tank country."

♦ ♦ ♦

### New Tankdozers Built

New tankdozers to fit into the Armed Forces high-speed tractor and tank program are announced by Gar Wood Industries.

The tankdozers are being built at the Mattoon, Ill., plant of Gar Wood Industries, one of the largest integrated plants in the world devoted exclusively to the production of heavy duty scrapers, dozers, and other allied tractor equipment. Models can be made available for every type of tank and high-speed military tractor.

Circulars describing the tankdozer are available as a guide and ready-reference for those individuals responsible for procuring field equipment for the Armed Forces.

♦ ♦ ♦

### British Tank Commander Speaks Up On Tanks

LONDON—A British army officer says American tanks in action in Korea are "made for Hollywood, not for fighting."

Lt. Col. Sir William Guy Lowther, commander of the 8th Royal Hussars armored regiment, declared one British Centurion tank is worth two American Pattons.

He told 3,000 workers at the Centurion plants in Leeds recently:

"In Korea we did not want the Patton, but the Americans wanted the Centurions. They used to say, 'What wouldn't we do with a tank like that?'"

"In one battle 52 Allied tanks—half British and the rest American—were damaged by Chinese mines. All the British tanks got away under their own power. Every American machine had to be towed back.

"The whole world is awakening to

the fact that Britain can produce the best tanks."

Another Hussar officer, one of 14 Korea veterans who toured the plant with Sir William, told reporters afterward:

"It's time people at home realized the truth. American tanks in Korea are no good. They are outclassed by ours in every way. Ours climb better, move quicker and can get in and out of a tough spot before the Americans are half started."

An embarrassed official of the ministry of supply, which arranged the visit to the Leeds plant said, "the visit was arranged so someone from Korea could say 'thank you,' personally to those who made tanks. We did not know Sir William would speak out so strongly against our ally."

A war office spokesman commented that Lowther was "speaking for home consumption, after all."

"I suppose," added the official, "he wanted to buck the workers up a bit."

### Newsman on Tank and Vehicle Test Demonstration Tour

A spectacular tank and vehicle test demonstration was put on recently at Aberdeen Proving Ground for 11 of the nation's leading automotive news writers who are on a 17,000-mile trip presenting the story of tank and automotive equipment "from the cradle to the grave."

The show was conducted by Development and Proof Services and included a review of combat and transport vehicles; automotive instrumentation and tests and a firing demonstration. It was part of a 28-day tour originating at Detroit, which will take the auto news writers throughout the United States, Alaska, Hawaii, Japan and Korea.

The newsmen are getting the story of design, development, testing, use and rebuild of the Army's vital vehicles. The local phase was to show how tanks and trucks are tested before acceptance for use in combat.

### COLONEL FRANK TOMPKINS NAMED AN HONORARY MEMBER OF THE U. S. ARMOR ASSOCIATION

Colonel Frank Tompkins, retired Army officer and veteran of four wars, has been awarded an Honorary Membership in the United States Armor Association. The honor was bestowed by the Executive Council of the organization in recognition of Colonel Tompkins' completion of sixty years of active membership in the Association of Mobile Warfare.

The 83-year-old resident of Northfield, Vermont, joined the U. S. Cavalry Association in 1891. This was at the start of a career that was to take him through four wars.

Colonel Tompkins served in Cuba in the period 1899-1901, and again from 1906 to 1909. He served in the Philippines during the insurrection there, and on the Mexican Punitive Expedition in pursuit of Villa. In World War I he organized the 301st Infantry and took it to France, where he was transferred to the 28th Division and command of the 110th Infantry. In the battles on the Vele River in August and September of 1918 he was gassed, receiving no less than 17 third degree burns, which resulted in his retirement.

Colonel Tompkins is a former commandant of Norwich University at Northfield, Vermont, and is now a member of the Norwich Board of Trustees. He served three tours of duty at the famous military school as professor of military science and tactics, as well as being commandant of cadets.

Colonel Tompkins holds the Distinguished Service Cross among many decorations.





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## Armor's Military Stakes

*Competition is the inspiration behind individual and team perfection in the world of sports. In the military area it serves as a hinge for advancing soldier qualification at all levels and in all stages of the training cycle. This story of competitive training for officer candidates illustrates one method of turning out our champions*

U.S. Army Photos

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**M**AJ. GEN. I. D. WHITE, commander of The Armored Center, has instituted an old Cavalry tradition at Fort Knox—the Military Stakes.

The Cavalry Standard Stakes had been in use at The Cavalry School for 25 years prior to World War II when General White, as Ground General School commandant at Fort Riley in 1947, adapted it as the Military Stakes for the Officer Candidate Course. The first Armor officer candidates since World War II at The Armored Center, for whom the Stakes course was constructed, will compete in March during the 21st week of their 22-week course.

Military Stakes' predecessor, the Cavalry Standard Stakes, was primarily a mounted competition where the contestant, riding a series of horses, was required to negotiate a course of jumps, run a cross-country race, a mounted saber course, and carry a polo ball the length of a polo field. Each contestant had to demonstrate his marksmanship with rifle and pistol and his ability at foot racing. Each entrant paid a dollar entry fee and the Stakes were run on a winner-take-all basis.

The Cavalry tradition was continued in the Military Stakes, opened at Fort Riley in 1947, in one station which required negotiation on horseback. There were a total of 33 problems, or stations, in the two-mile

course which contestants were expected to complete in 45 minutes. Members of Officer Basic and Officer Candidate classes at the Ground General School competed and were scored on a basis of 700 points for demonstrating proficiency at the various stations and an additional 300 points for finishing in 45 minutes. The same scoring basis of 1000 points is being used for the new Armor Military Stakes.

The Stakes at The Armored Cen-

ter is a road and cross-country foot race which has been initiated with twenty stations requiring solutions to basic military, tactical, or proficiency type problems. The course is one mile longer than the Fort Riley Stakes of 1947 and contestants lose five points for each minute in excess of a "standard" running time of 105 minutes they require to finish. Additional stations will be added before the first Armor Officer Candidate class competes in March, during the 21st week of their course begun in September.

The Armored School Officer Advanced Class competed in a trial run of the Stakes and made recommendations toward improving the course. At a critique of the Stakes by members of the Advanced Class, General White pointed out that the Military Stakes is "basically a county fair" type of competition and recommended more professional competitions pertaining to military proficiency.

The Armor Stakes has been called somewhat more difficult than its Fort Riley predecessor because of the hilly terrain features of Kentucky. The most difficult terrain feature is the run from Station 11, cross country across Buffalo Creek and up a long incline to Stations 12 through 19 in the Brumfield Range area.

Station One, in the Steeles No. 1 area, requires the contestant to locate a defective wire circuit, to connect field telephone EE-8 or field wire



Contestants arriving at this station are required to assemble the M3A1 submachine gun, fire ten rounds at two silhouette targets, then reassemble the gun.

ARMOR—March-April, 1952





Meeting a problem in 1st echelon tank maintenance at this station, contestant must determine the correctness of track tension on this M4A3E8 Sherman tank.

lines, and to correctly splice a broken conductor on field wire W-110-B.

At *Station Two* he must assemble Sub-Machine Gun M3A1, fire 10 rounds at two silhouette targets and disassemble.

*Station Three* requires him to assemble M1 rifle, load and fire 10 rounds including two rounds tracer, fire at two silhouette targets 125 and 200 yards distant, and disassemble.

The requirement at *Station Four* is to assemble a .45 caliber pistol, fire five rounds at silhouette target, and disassemble.

At *Station Five* the runner is asked to solve an attack situation including designation of attack position and routes thereto, a line of departure, the direction of the main attack and formation to be used during the attack.

*Station Six* requires the reconnoitering of a prepared road block and adjacent area, selection of the areas to be mined and disposition of the reconnaissance platoon securing the road block.

*Station Seven* requires the contestant to locate and remove two antitank mines in a given area.

*Station Eight* is a map reading problem where he must determine the grid coordinate reading to the nearest thousand meters of the station, the elevation to the nearest five feet and

distance to the next station.

The situation at *Station Nine* requires selection of a proper recovery method of a ditched vehicle among three mock-up choices.

*Station Ten* is an intelligence quiz requiring observation and decision on disposition of dead enemy personnel, disposition of prisoners of war and of captured enemy radio.

A security problem is presented at *Station Eleven* where the organization

and location of the security elements for a tank company assembly area must be selected.

At *Station Twelve* the contestant must throw three hand grenades into designated openings.

*Station Thirteen*, designated 1st Echelon Maintenance, requires determination of correct track tension. M4 Sherman tanks permanently maintained on the Brumfield Range area are utilized at this and succeeding stations requiring the use of tanks.

*Station Fourteen* is a field message writing exercise where the contestant must properly fill out a message blank, writing a clear, complete, and concise message.

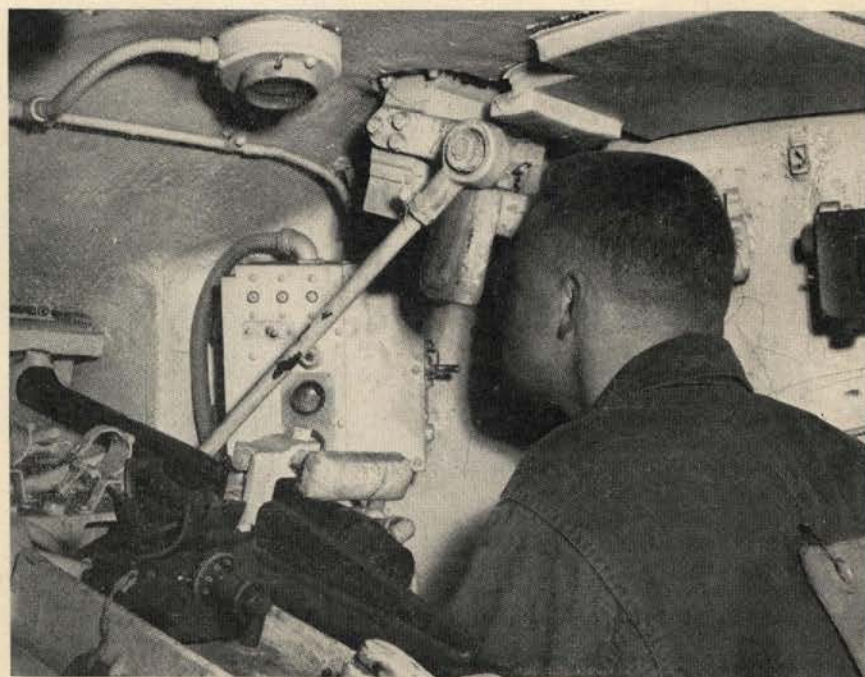
The requirement at *Station Fifteen* is to prepare and place a demolition charge to fell a tree.

*Station Sixteen* tests the use of correct Radio/Telephone procedure.

At *Station Seventeen* the contestant must lay a tank gun on designated target. He is to estimate range and have correct sight picture for range and deflection.

*Station Eighteen*, involving tank machine gun (coax), requires Fire Table III and Manipulation Course FM 23-55.

At *Station Nineteen* the runner must correct a mechanical deficiency in a jeep and start the motor.



At this station the contestant is required to lay the tank gun on a target and estimate the range, having the correct sight picture for range and deflection.



Station Twenty requires correct identification and a knowledge of the characteristics of radio sets used in Armor.

Points at the various stations are awarded for degrees of demonstrated proficiency, rather than on an all-or-none basis. At Station Sixteen involving Radio/Telephone procedure with a total possible score of 30 points, of the 190 Advanced class contestants, 127 scored 30 to 21 points, 59 scored 20 to 11 points and four scored 10 to 1 points.

Each of the stations is operated by personnel of one of the four instructional departments of The Armored School which teaches the material or equipment involved in the particular problem. For instance, Station Nineteen, vehicle trouble shooting, is operated by personnel of the Automotive Department; the Command and Staff Department set up and operates Station Ten, intelligence; personnel of the Communication Department are in charge and grade the performance of Stakes contestants at Station Twenty, characteristics and nomenclature of Armor radio sets; and Stations Seventeen and Eighteen, involving tank guns, were planned and are operated by the Weapons Department.

This planning and operation ar-



Three simulated targets representing a window, a foxhole and a door are here to test the accuracy of the contestant in throwing hand grenades.

range coincides with the instructional plan of the new Armor Officer Candidate Course. The course operates as a new department of The Armored School and candidates receive most of the instruction preparing them for duty as Armor officers from the four previously constituted instructional departments.

The job of planning the stations and mapping the Armor Stakes was assigned to Major John L. Rees, Operations Officer of the Armor Officer

Candidate Department, and was carried out under the direction of Colonel William H. Wood, department director. Planning was begun about October 1 by Major Rees and Captain Leroy G. Cewe and Master Sergeant Charles Clark of the Operations Section. Actual construction of the present twenty stations, utilizing Sherman tanks permanently maintained on Steeles and Brumfield Ranges, required a week.

The trial competition by members of the Armored Officer Advanced Class was held on November 20, shortly after the Stakes course was completed. A previous smaller scale trial was run on November 15 by Tank Leader Course No. 6, but the Advanced Class was scheduled to compete in order that the officer candidates might gain by the opinions and recommendations of the experienced officers, many of whom have had combat experience in Korea.

Captain Norman T. Stanfield accumulated the highest over-all score among Advanced Class officers, of 890 points of the total possible 1000. General White marked the occasion by presenting to Capt. Stanfield an engraved silver plate. Second prize, also a silver plate, was given to Captain William D. Lynch who gained 888 points. General White presented a desk pen and pencil set to Lt. Col. Alva T. McDaniel, holder of the third highest over-all score of 883 points.

The highest station score of the class, 600 of a possible 700 points, was achieved by Major James R. Waldie and the fastest time for the three-mile, twenty station course was 78 minutes, recorded for Captain Harlan G. Koch.

The over-all class average was 691 of a total 1000 points possible. The average station score was 468 of 700 points possible and the average running time was 107.7 minutes.

The officer candidate classes are expected to average a somewhat lower running time after months of physical conditioning as candidates and because of their relative youth. A somewhat higher average station score may be set because the various stations are planned to test in a practical manner the specific material the candidates have been taught in classrooms and tank "laboratories." Appropriate trophies will be presented to candidates who are class winners of Armor Military Stakes competitions.



In a problem concerning the correct location and organization of security elements for a tank company assembly area, three possible solutions are offered.



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## A POSTGRADUATE COURSE ON A CONTROVERSIAL BATTLE

**LEGEND INTO HISTORY.** By  
Charles Kuhlman. The Stack-  
pole Company. \$5.00.

Reviewed by  
**HERBERT H. FROST**

From the day the famous picture was put in place behind the bar until the advent of national prohibition, "Custer's Last Stand" was seen by hundreds of thousands who looked across their 5¢ "largest and coolest in the city." It was as much a part of the saloon as the free lunch and the wet sawdust. Regular customers who drank rye with a beer chaser frequently indulged in heated debate on all phases of the action shown in the picture, and considered themselves military experts and students of the period.

— The Reviewer —



Herbert H. Frost, a colonel in the Reserve, served in Cavalry in World War I and with the 2d and 13th Armored Divisions in World War II. A vice-president of the Armor Association, he has been a student of Custer and his period since 1923, and has studied the Little Big Horn battlefield from the back of a horse, covering every route of the troops and Indians.

ARMOR—March-April, 1952



George Armstrong Custer

Judging from the tonnage of lurid and irresponsible accounts of the Battle of the Little Big Horn and of George Armstrong Custer which have been published over the years, some of the drinkers became "historians" and writers on the subject. This does not mean to imply that everything published in the past has been lacking in historical accuracy or earnest endeavor on the part of the author. Books and articles by qualified and serious-minded writers have fallen short of being completely acceptable for a number of reasons.

The first accounts of the incident could hardly have been without prejudice or bias. The writers although responsible, were too close to the subject and the participants to reconstruct the battle objectively. The late and great Lt. Gen. James G. Harbord told me of the many discussions he listened to as a very young and very junior officer. The senior officers put forth many controversial views and conclusions. The junior officers listened.

The second group of responsible

writers produced some excellent material of recognized value. Some included the life of Custer with the Little Big Horn as the most important chapter; others wrote only of the battle, while still others included as background the organization of the 7th Cavalry after the War between the States. None of these writers appears to have had the health, time and money required to make a complete study of this most baffling episode.

Now, 75 years after the event, comes Dr. Charles Kuhlman with his record of findings resulting from years of research, analysis and the use of a progressive plan of evaluation. Regardless of viewpoint, the reader will find that his intensive and painstaking efforts have produced as factual a report of men and events as can be made from records and evidence.

— The Author —



Charles Kuhlman holds B.A. and M.A. degrees from the University of Nebraska, and a Ph.D. from Zurich University. His career as Instructor in the Department of European History at Nebraska was halted by loss of hearing. He turned to farming in Montana, where a visit to the Custer battlefield in the 1930's inspired sixteen years of research, leading to this book.



*Legend Into History* is a valuable contribution to the historical literature of the United States. I believe it is the first completely objective account of what took place that week in June 1876. Approaching the subject with an open mind, the author makes a study plan wherein all evidence is weighed against established base points and the factors of time, space and topography. Terrain studies were made to insure the accuracy of distances from base points and to account for contour changes resulting from time and the elements. I do not believe this plan of approach can be improved upon. Dr. Kuhlman puts

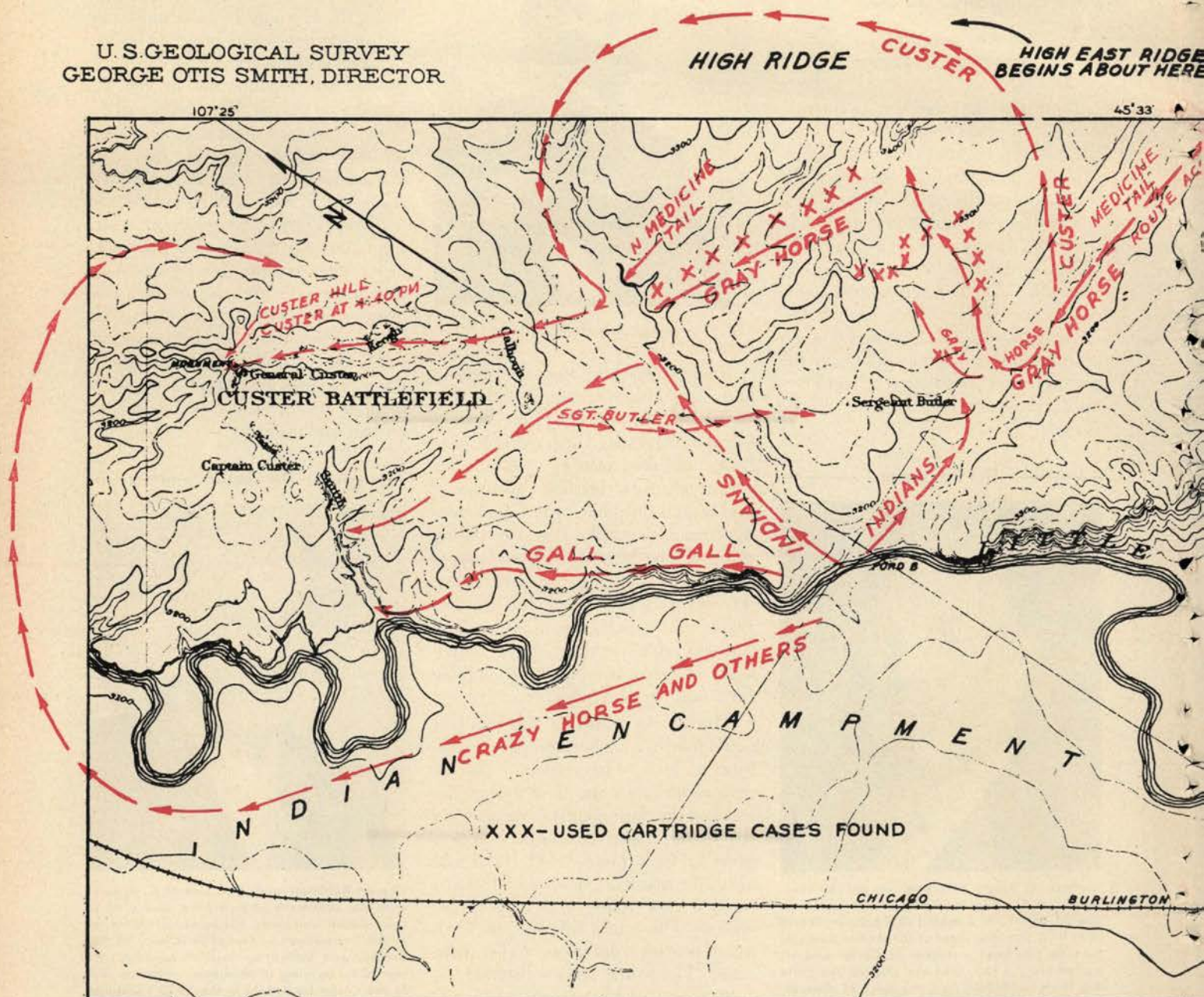
every piece of evidence available under the spotlight of comparative evaluation, accepting or rejecting on the basis of how it coincides with base points, time, space and terrain. From this has come truth or convincing probability.

The bibliography listed by Dr. Kuhlman includes the best and the worst. He has searched the findings of the responsible writers and the ramblings of the unscrupulous who have produced new and ghastly situations on short notice when the market indicated another Custer book or arti-

cle could be sold.

Perhaps the outstanding single contribution made by Dr. Kuhlman is the analysis and evaluation of the Indians' side of the battle. Controversial stories in the press were front page news for a long time. Stories were slanted pro or con, generally depending upon the political efforts of the editor to uphold or discredit the administration in Washington for the way our Indian affairs had been handled. Statements from Indians were obtained through fear or favor, and each statement seemed to be what the editor wanted.

U.S. GEOLOGICAL SURVEY  
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After the Indian wars came to a close, many Indians found it profitable to make statements for writers, to prove the writers' point. The Indian village became part of the American circus and Wild West Show, each one featuring a great chief who had given Custer his death shot and who then heroically protected the body of the General from Indian mutilation.

Dr. Kuhlman has produced a most convincing Indian pattern in every detail.

Were the Indians on the war path?  
Did the Indians want to fight on 25 June?

Did they have any plan of organ-

ized force?

Did their fighting follow any tactical plan?

Where was the village located?

What was the strength of the village?

What was the strength of the force leaving the village to fight?

Why did they fight on foot most of the day?

Who were the combat leaders?

Did all of the Indians have rifles?

Was the arrow more effective?

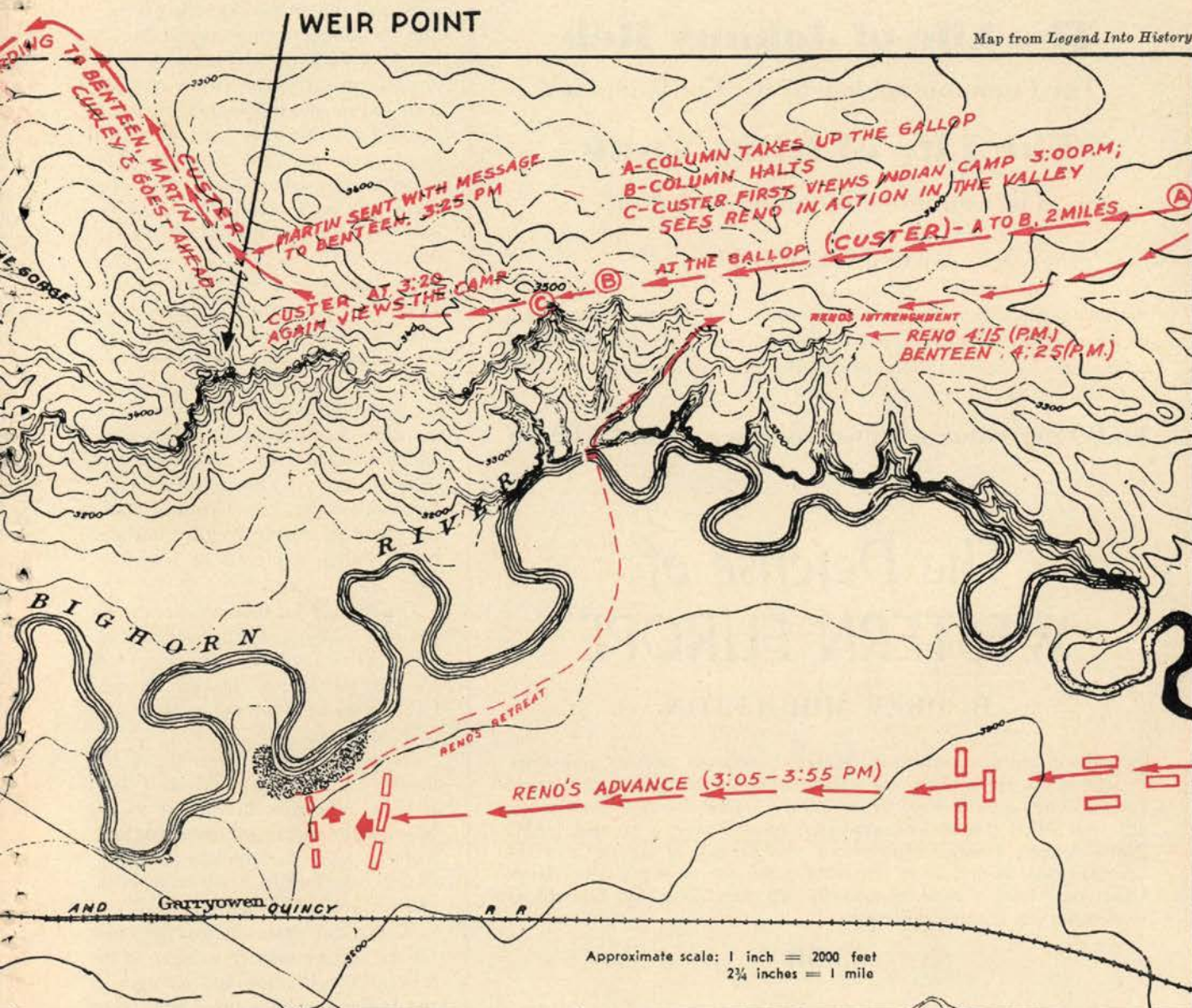
Did the Indians know Custer was in command?

Did the Indians set a trap?

Did Sitting Bull lead them in the battle?

These questions and many more are answered by the author.

The chapter setting the preliminaries is carefully compiled and documented. After the conference on the steamer *Far West*, there was no lack of understanding on the part of Terry, Custer or Gibbon, as to what was expected and the general plan of accomplishment. All concerned with command responsibility were in agreement. Much has been written about the "order" given Custer on 22 June by General Terry through his adjutant, Captain E. W. Smith. How this can be construed as an order seems beyond the scope of understanding of most military men. As pointed out by Dr. Kuhlman, this so-called order was a confirming directive based





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on the conference and nothing more.

Custer was given the views of his superior, relative to the objective with the statement, "It is, of course, impossible to give you precise instructions in regard to this movement, and were it not impossible to do so, the Department Commander places too much confidence in your zeal, energy and ability to wish to impose on you precise orders which might hamper your action when nearly in contact with the enemy. He will, however, indicate to you his own views of what your action should be, and he desires that you should conform to them unless you shall see sufficient reason for departing from them."

Further in the directive, it is noted that the basic objective is to prevent the escape of the Indians. Background reading on this point will show the press and the public clamoring for action to kill or capture these roving bands of Indians who seemed to be able to outsmart the Army at every turn and remain free marauders. How could Terry have been more explicit or more detailed in what he gave Custer? The whereabouts of the Indians was not known. There was no fixed objective to be reached and it was hoped that as the action unfolded the columns of Gibbon and Custer would be within supporting distance. Communication was, of course, by means of mounted messenger and each day's march by the regiment from the headquarters of the Commanding General meant three days' added time to deliver a message and receive a reply. This is based on the assumption that every courier could get through hostile country without being killed, captured or forced to hide.

Custer had his mission; he was on his own insofar as the tactical employment of his regiment was concerned. He was mindful of the plan to meet Gibbon somewhere and to their mutual advantage.

Immediately upon learning of the death of Custer, someone on Terry's staff or otherwise accredited to his headquarters, changed the words "sufficient reason" to "absolute necessity" in the copy made in Terry's copy book. (Was the forger brought to trial?)

The author makes an excellent case for the reconnaissance in force to determine the location and strength of the Indians. The point is well taken



that Custer could not have made any plan of attack prior to knowing locations and number of villages and estimated strength. What Custer did know was that any and all escape routes must be covered; the Indians must not get away again.

Much has been written about the command being divided into three separate units and sent on independent missions beyond supporting distance. Dr. Kuhlman brings this into focus by showing distances he measured on the ground.

Contrary to what has been written, Benteen, except for about one-half hour, was never more than 7 miles from Reno, or Custer, not 15 miles. When Benteen arrived on Reno Hill, he was less than 4 miles from Custer's position at that time, not 6 miles as frequently stated. Evaluation of time and space, plus some visual communication and the sound of firing, show how Reno and Benteen could have reached Custer in time to support him and perhaps have turned the tide of battle. There were wounded to be carried and other obstacles, requiring the energy and leadership of an unusual man.

When Benteen arrived on the hill, did he find his superior officer in a state of hysteria, surrounded by panic-stricken survivors of the squadron? If so, was it possible for Benteen to arbitrarily take command and reorganize in time to be effective in moving toward Custer? The answers to these most important questions are given in detail and are supported by the factors of time and distance.

A great deal of factual information might have been expected from the Court of Inquiry. While the Court was convened at the request of Reno to investigate his conduct, the witnesses, of course, included many who had been present at the Little Big Horn. The record shows evasion on the part of the most important witnesses, even to the extent of direct contradiction of statements made on previous occasions.

*Legend Into History* is more of a report than a story. It is not for the Custer beginner. The author does not ask the reader to accept his findings as the approved solution. What he has written is offered for study by those who will search this great American tragedy during the next 75 years. Dr. Kuhlman has produced a masterpiece.

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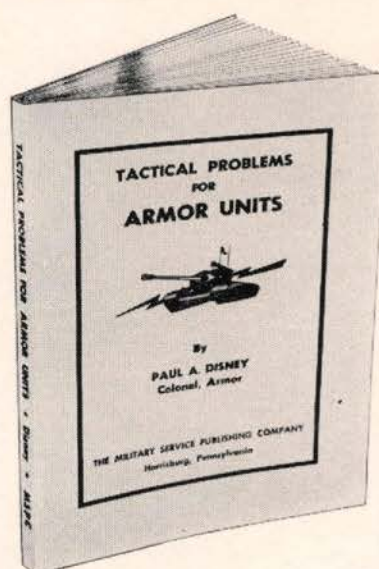
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[See Pages 30-33]

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# LETTERS to the EDITOR

## Comment on Night Firing

Dear Sir:

In regard to Lt. Long's letter concerning night firing, I feel that I might be able to clear up a few points. During an extended period of training in the late winter of 1951 at Baumholder, Germany, the 63d Tank Battalion, 1st Infantry Division, conducted platoon night firing exercises with excellent results. At that time I was in charge of the range and had no small hand in running the problem.

Briefly it was handled in the following manner. The platoon leader, about two hours before darkness, was told to move his platoon to an assembly area, where he would receive a defense order. Upon arrival he was met by the range officer, who pointed out a defensive position to him, giving him the standard five-paragraph operation order, the gist of which was for him to occupy the position with his platoon and be prepared to defend it against all comers during the hours of darkness.

The platoon moved in, made out range cards, and generally tied itself in, with imaginary units on the flanks. The problem was so devised that the platoon would have sufficient time to organize its position and make out the proper fire plan.

After total darkness had set in, allowing the troops to obtain night vision, the platoon leader began to get indications of approaching enemy through information given him in the form of stereotyped messages over the radio. At a specified time the actual firing problem began.

We were able to fix up five targets per platoon by use of electric blasting caps, a blasting machine and 800-1000 yards of assault wire per target. A one pound block of TNT was set in the target area. Within ten yards of the TNT was a five gallon drum of gasoline and oil. This did not explode when the TNT was detonated, but did explode, signifying a hit, when struck by tracer or WP 90mm. Targets were set off at about one minute intervals and at the end of the problem the platoon was ordered to fire its weapons along each weapon's principal direction of fire. Needless to say, the platoon was well critiqued at the completion of the exercise. The following points were taken into consideration for the critique: 1 Completeness of range cards and fire plans; 2 Use of the dismounted .30 caliber machine guns; 3 Target designation and general fire control by the platoon leader; 4 Number of targets hit versus number engaged; 5 Maximum use of all night sighting and lighting devices; 6 Actions and orders and reactions to orders by tank crews.

The weak points of the problem were as follows: 1 Lack of infantry to provide realism to the situation; 2 Some target failures due to destruction of det-

onating wire; 3 Some lack of realism due to range limitations and a shortage of wire.

All of the above limitations are minor and easily remedied.

The problem had excellent results. It gave needed confidence to the men participating, demonstrating that their weapons are effective at night when the user has confidence and experience. It familiarized them with the operation of night firing and lighting devices and the functions of a range card.

I hope that this sketch of our exercise will be of some value to Lt. Long and others interested in night firing.

CAPTAIN GEORGE S. PATTON  
Advanced Class, TAS

Fort Knox, Ky.

## Posting the Guard

Dear Sir:

M Sgt James D. Merrill and ARMOR are to be congratulated on the excellent "The Little Things that Count!" in the March-April issue in your increasingly fine magazine.

The techniques described by Sgt Merrill provide absorbing reading; I hope that this feature becomes a regular section in ARMOR.

Such things make for splendid background material in classroom instruction. I'd like to toss in the suggestion that some battlefield techniques also be printed—such as the fine one brought out by Major Rankin of the C&S Department at the Armored School that a sure way to slow down enemy armor at night is the simple expedient of placing a lamp or two on likely avenues of approach.

You are making an excellent contribution to the education of all armored officers and men.

MAJOR DONALD G. McLEOD  
Hq 138th Tank Bn (Med)  
Indiana National Guard

Bedford, Indiana

## Background for Esprit

Dear Sir:

The flags Sergeant Brown proudly points to on your splendid March-April cover are symbolic of an element of leadership . . . *esprit de corps* . . . more important at the combat level than international cooperation.

As you know Armor unit combat recognition, during the first year in Korea, was sufficiently remote to jeopardize the *esprit* of tankers. Therefore, as contest to ill deserved recognition, we conceived a turret decoration, part of which is shown in your cover photograph. We achieved our purpose, we deserved combat recognition, by painting the tank commander's name just below the hatch, then the flags depicting the units we fought with, while below that the enemy vehicles each tank had to its credit.

Suffice it to say, by announcing to the Eighth Army at large each tank commander's name and the tank's decorations and achievements, the individual crew's combat efficiency, morale and discipline soared to new heights. As a result the recognition necessary to high *esprit* was accomplished.

On behalf of the former men and officers of Company C, 72nd Tank Battalion, please accept my gratitude for the recognition you have bestowed upon them.

CAPTAIN C. R. McFADDEN  
Fort Knox, Kentucky

## It's Funny But It's True

Dear Sir:

I enjoyed the March-April issue of ARMOR very much, just as I have enjoyed all issues in the past.

I do, however, question the figure of \$700.00 for rebuilding an M46 tank in the Tokyo Ordnance Depot as set forth under the pictorial story, "Tank Rebuild in Japan." That sum would hardly pay for reconditioning a "jeep."

LIEUTENANT JAMES B. EGGER  
Office of Inspector of Armor  
Fort Monroe, Va.

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**Rates:** See bottom of contents page.



## A. Problem Problem . . .

Dear Sir:

We read with continued interest your "How Would You Do It" section. Problem No. 2 of your January-February issue indeed poses a problem. We wonder at the advisability of a stationary anchor tank, inasmuch as the cable from the M-32 will cut across the track of the anchor tank as the upset tank is towed forward.

We recommend that the anchor tank bear to the left, and move forward with the towing tanks.

LIEUT. JOSEPH R. GIESEL, USMC

LIEUT. FRANCIS J. STOECKER

LIEUT. DAVID C. WALTZ

73d Tank Battalion

APO 301

## Our Tank Position

Dear Sir:

It was rather alarming to read the comment of a British tank officer in *Armor Notes* (March-April issue) regarding the value of American tanks in Korea. This statement, coming on top of two letters published recently in another service journal regarding other arms, is enough to raise and to cause us to seriously consider the question: Is Ordnance meeting its responsibility to the combat soldier of furnishing him the best weapons and arms available? And, more pointedly, do American tanks stand up under the strain of combat usage.

It is more or less accepted that the M4 series tank was not ideal in many respects but the best we could do in quantity production at its time; that the M26 pointed towards the type of tank development we desired but had its power, maintenance and firing difficulties. It was my understanding that the Patton tank, while only an improved version of the M26 and an interim model, would overcome the low power and improve on the firing and maintenance difficulties; and that the newer tanks would be the ultimate in tank development of their time.

However, the statement by the British officer calls a halt to such consoling thoughts and understandings. It points directly to the question: Are our tanks the finest we can get? From what I have read and heard, and from what I learned and saw as a tank platoon leader in the 6th Armored Cavalry Regiment, I feel certain that we can say we do have the finest tank—in refinements. That is, our tanks probably are the most highly engineered; but do they have the dependability and stamina—the guts—to stand up to the strain of combat; rough cross-country handling, the ability to keep going when maintenance falls off (this must be considered) and to continue to operate dependably with only gassing and oiling, to take the driver and terrain abuse?

It would be helpful to have comments from those men who have had the opportunity to see in action and to compare the fighting qualities of our Patton with the British Centurion. These comments should cover:

a. Do our tanks measure up in the desired fighting characteristics (speed, cross-country mobility, response to controls, agility, overcoming obstacles) to the Centurion? If not, where do we fail?

b. Do our tanks have too many gadgets that foul up or cannot be trusted? If so, which are impractical and what goes wrong?

c. Will our tanks take the over-all beating of others. If not, where are they weak?

d. Are our tanks too complex and do they require too highly specialized and trained personnel to operate and maintain them?

These comments should be blunt and open and backed up by factual examples as illustration.

I would like to see some comments on our combat vehicles; especially from those who have had the opportunity to compare them in combat and on maneuvers with those of other nations.

LIEUTENANT H. C. RICHARDSON  
The Ordnance School  
Aberdeen Proving Ground, Md.

## The Groundwork

Dear Sir:

Your magazine has been so interesting and informative to me and to my classmates at the Military Academy . . .

As a Cadet who will be commissioned in the near future I am particularly interested in your articles on the small unit commander. I am especially interested as I hope to be commissioned in Armor, and your magazine provides a wealth of valuable and practical information. Your "How Would You Do It?" series is very good. These articles give us a chance to project ourselves into the future and get some "academic," so to speak, practical knowledge. Just keep these coming and you will keep a friend. Many friends, I might add, as my copy of *ARMOR* generally makes the rounds before I get a chance at it.

CADET E. B. MCCLUNG

Co. B-1, USCC

West Point, New York

## Protection and Penetration

Dear Sir:

Although much of our tank construction is along conventional lines, I feel we should always be looking for the new developments. And since weight and crew space are such important factors, I am wondering why we can't mount our guns, for example, outside of the turret in such a way that it can be served from inside.

What would be the effect of shaped charges on highly compressed thick cased plastic plates?

These are interesting considerations to me, and I would like to hear some discussion on this line.

MAJOR R. SHEEL

Ambala, Cantt, India

## Armor Reserve

Dear Sir:

I would like to comment on your editorial "Let's Not Lose Division Vision" in the March-April issue.

It is too bad that we had to lose these organizations. Many of our Reserve Armor officers feel that there is little for them on an inactive status in their branch specialty. I know quite a few Armor Reservists who have no real interest in their branch because most of the inactive training they receive has nothing to do with *Armor*.

Perhaps one solution for the Reserve would be to concentrate on the Armored Cavalry Regiment and Group formations, the latter especially for higher level officer training in conjunction with Armored School courses.

I think the idea of making the Constabulary units in Germany into the 4th Armored Division is excellent. If that had been done a year or so ago, perhaps the 2d Armored would not have been needed so early.

LT. COL. JOHN F. REINECK, USAR  
Falls Church, Va.

## ARMOR



Although the light and heavy tanks have a firm place in the mobile picture it is the medium tank that has the major task of putting the mobility, fire power and shock action into ground combat. Thus the importance of the arrival of a new medium tank for American forces. The M47 tank is significant by virtue of its new turret and many other improvements. It has successfully completed production line modification and is ready for the mobile arm.



# *Inquiry Into the Military Mind\**

*In an election year spotlighting two of our top generals  
a distinguished writer weighs the advantages and disadvantages of  
the military mind in the area of nonmilitary affairs*

by JOHN P. MARQUAND

Army Commander in Chief in the Revolutionary War and our first President, George Washington was no career soldier.





**P**RESIDENT TRUMAN, who is in a position to know about such things, said the other day that eleven Army generals had served as Presidents of the United States. Superficially this seems like an alarmingly large percentage of the thirty-two individuals who have held the Presidential office, but a further analysis of the list shows that most of Mr. Truman's big brass were ordinary civilians, like you or me. George Washington, for example, though his tactics received the approval of Frederick of Prussia, was not a professional soldier but a Virginia planter. Neither was the greatest hero of the Democratic party, Andrew Jackson, although he whipped the British career officers in the battle of New Orleans. He was primarily a lawyer and a politician, the purest example, perhaps, of a political general in the annals of our Republic.

Zachary Taylor, a fine strategist and excellent field commander, comes closer to the strict professional definition, but he was not a graduate of West Point. In fact, only one general in the Truman list really comes up to an exacting standard. He is, of course, Ulysses S. Grant, the only one of the lot who was a graduate of West Point and a man whose military gifts are now receiving a much greater critical recognition than they did a few years back. General Grant is also the only individual who brought to our highest office what might be called the gifts of the pure military mind, and also some of its weaknesses. He was, for instance, unable to understand a great many of the civilian minds he encountered, notably that of Jay Gould, the financier, who had never heard a gun go off in anger.

While we are on the subject, it is interesting, if not important, to observe, in view of the continued rivalry between the two services, that no admiral has ever been a President of the United States. This does not mean that no admiral has coveted the posi-

★This article appeared in a recent issue of *The New York Times Sunday Magazine*, and is reprinted here with the kind permission of *The Times* and the author.

John P. Marquand, novelist, is author of *Melville Goodwin, U.S.A.*, a story about an Army general, which was published last year.

**ARMOR—May-June, 1952**

Library of Congress & U.S. Army Photos



Andrew Jackson, courier in the Revolution, general in the War of 1812.



William H. Harrison, Indian fighter and also general in the War of 1812.



Zachary Taylor fought in 1812, in Indian campaigns, and the Mexican War.

tion. Admiral Dewey, for one, was seriously considered as Presidential timber by politicians after his Manila victory. When tentatively approached, he is supposed to have said that he thought he could fill the office adequately, because, in his opinion, the Presidency demanded an ability to take and execute orders, and this was something he had learned to do during his life in the service. For some reason this simple considered statement, while utterly characteristic of an accepted service viewpoint, did not appeal to the general public, and shortly after he made it, the admiral's star dropped rapidly below the political horizon.

In the light of our present reliance on military men, it is somewhat ironical that General Grant, with all his proven abilities for leadership and with a sense for strategy that is entirely modern, was not outstanding as President. Like Admiral Dewey, he was used to taking orders, but he was also highly competent to give them. He was not afraid of decisions. He could think through any given problem to a clear conclusion and, in spite of what critics say of him, he was a man of exceptionally strong intelligence. His main difficulty would seem to be that he never understood the democratic give and take of the Presidency any more than Admiral Dewey, and there is no particular reason why he should have. He was not trained at West Point to be a future President of the United States. He was trained to be a soldier with a military mind and his deficiencies do not imply that a military mind necessarily unfits its owner to hold a high political office. Yet they indicate, perhaps, that the military mind does present its owner with specific handicaps which he must overcome in order to get on with the great mass of his fellow-citizens, who have not been subjected to his disciplines and training.

The question now arises again, as it has here after each of this nation's wars: Can a soldier be a good President of the United States? Can a man who has spent his life within the exacting, arbitrary and rather unworldly limits of the military service cope with the broader and very different complexities of the Presidency? Is he pliant enough? Can he understand and forgive the indiscipline of citizens out of uniform? More specifi-



cally, can General Eisenhower do a better job as Chief Executive than his distinguished predecessor?

General Eisenhower is a graduate of General Grant's old school and he wears the old school tie more dashingly than Grant ever wore it. He stands at the top of his profession, as Grant did. He has even greater popularity, having the South behind him as well as the North, never having been obliged to send a Sherman marching through Georgia.

General Eisenhower is less grim, less slow, less ponderous and his character, judging Grant's from a distance, is vastly more genial. It would be impossible to think of U. S. Grant, had he been President of Columbia Uni-

or over, no matter how differently each may have looked from the other when they started as plebes at West Point. The stamp of success has been placed on their features. Their mouths have the same lines of resolution and their eyes the same steadiness. No matter what their particular attributes of character may have been, they have become individuals of action. They all make a similar impression upon an outside observer, an impression which has often been described by Tolstoy, Stendhal and many lesser writers. This resemblance, of course, is superficial, and most individuals in this highly specialized group would be apt to deny its existence, knowing that they possess at bottom the infinite

they no longer require the support of arrogance or aggressiveness. Instead they can finally afford a philosophical kindliness. They have learned a great deal about human beings under stress. They are excellent judges of certain limited regions of human character.

It has been the fashion lately, especially among younger writers who have revolted against the peculiar demands of their military service, to picture general officers as stupid extroverts, and in this respect I think they are much mistaken. The military mind may have blind spots, but no general can possibly be stupid. Actually, he is a better writer than most of his literary critics, at least in straight expository prose. He is also a clearer



Franklin Pierce was a brigadier general in the Mexican War, 1846-1848.



Andrew Johnson was military governor of Tennessee, saw no field service.



Ulysses S. Grant, true career soldier and only West Pointer to be president.

versity, asking students to call him Sam. He would not have done so any more than General Lee, when he was a college president, ever asked the boys to call him Bob. Other times, other manners, but then U. S. Grant was always more diffident and less at home in his high position than General Eisenhower. Unlike Ike, he would have been very bad at the mike.

Yet these two very different personalities start from a common base. Any general, past or present, is very much like any other general. All professional soldiers have similar attitudes and reactions unavoidably, because they have the military mind.

There is a definite physical resemblance between all professional soldiers, especially when they have succeeded in reaching a two-star rank

variety of their fellow-citizens. Yet their similarity in appearance, their physical vigor, the squareness of their shoulders and even the cadence of their footsteps reflect a common character.

For years these highly skilled specialists have been subjected to a series of physical and mental tests far more grueling than those surmounted by the average industrialist or lawyer or scholar. The unfit among them have been eliminated by this constant competition, and World War II has subjected them to the greatest test of all—the ordeal of leadership in battle. Having succeeded, they have all developed in confidence and self-assurance, but they are so successful that assurance rests on them easily, and they know their capacity so well that

thinker, more logical and more objective and his training has enabled him to face any problem and to come up with a concise solution. The solution may be wrong, but at least it will be an answer, and this knowledge of ability naturally adds to assurance. It may even result in what is occasionally called a Messiah Complex by irreverent members of the staff. Generals themselves are aware of this final weakness. I have even heard one of the best of them say that no general should be in a high position for more than a limited time because the position itself removes him too far from reality.

The varieties of experience shared by all generals are quite different from those faced by a civilian in a nonmilitary career. Ever since they



entered West Point they have been in a game with different ground rules. They have been freed largely from the usual drives of financial necessity without ever becoming rich. They have been endowed with an economic security highly enviable to most of their contemporaries. Their profession has placed them in their own social order, a strict monastic sort of order governed by definite regulations seldom wholly comprehensible to a civilian, though millions of civilians have lived lately in the military world.

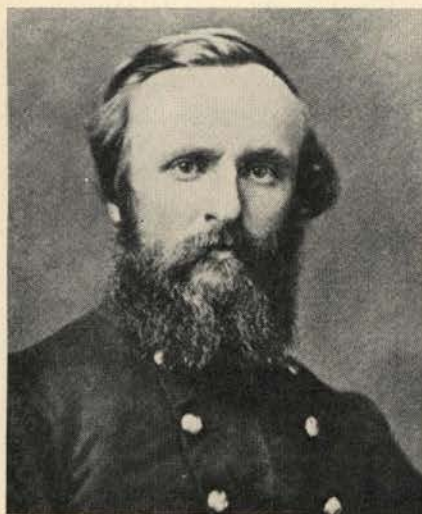
This order is what a general, broadly speaking, would call the Chain of Command, which gives everyone in the service sphere a definite relationship to everyone else above and below

ership. But Leadership has little to do with persuasion as a civilian knows it. It rests firmly upon character.

There is not space here to go into the intricacies of military life, but essentially it is a life of order devoid of many of the freedoms accepted in civilian life, and thus it is bound to develop many attitudes which are non-civilian. Though it may have its peculiar complexities, in the main it is a simple life for one who understands its values. This is why many generals appear to civilians like deceptively simple men. Most of them possess, from a civilian viewpoint, an unworldly character. At odd moments they are all beguilingly like Thackeray's Colonel Newcombe.

but on the whole he is impatient with small greediness and financial anxiety. He thinks of any human organization as a team and usually speaks of it as such, preferably a loyal football team with a good backfield, a brainy quarterback to call the signals, and a strong obedient line.

He knows the value of simple virtues. He has small tolerance for cowardice or selfishness, because he has become a selfless, dedicated person. He is apt to be confused also by the intricacies of civilian government, although he has always lived within its frame and is more familiar with certain aspects of it than his average civilian contemporary. He has often seen lawmakers when he has faced



Rutherford Hayes fought in the Civil War, was wounded on five occasions.



James A. Garfield was promoted for gallantry at Battle of Chickamauga.



Chester A. Arthur was quartermaster general of New York State militia.

him, setting everyone exactly in his place. It is a world in which everyone has both to command and obey, promptly and without the frictions of debate. Individuals, like generals, who have moved to the top of this chain of command know its artificial workings thoroughly, and they know exactly how to get things done within its limits. They have learned to rely on loyalty and to take compliance for granted in their world. If an order is clear and comprehensible, they can feel certain it will be obeyed within the limits of human fallibility. They will admit that there are good ways and bad ways of giving an order and that proper prompt compliance may depend on respect for the abilities of a superior, and this leads them to a subject known in military circles as Lead-

It is difficult for the military mind to grasp exactly what goes on at a meeting of the National Association of Manufacturers. It is hard for any general not to look upon industry as a sort of military installation and not to bring to his thoughts about civilian life the truths he has learned in the military world. It is very hard for him to understand the perpetual conflicts between labor and management, since in the Army a labor union would be unthinkable. It is difficult and often impossible for him to view patiently the interminable discussions over wages, hours and benefits, since all these have always been fixed in his world by arbitrary order. He can understand the handling of enormous sums of money when money is concerned with military appropriations,

Congressional committees, and some of his best friends may be Congressmen and Senators, but it is hard for him to understand more than academically their pliability and their ability to compromise. He has no constituents of his own and he has only been subjected indirectly, and usually most unpleasantly, to the pressures of the electorate. Debate, when protracted, makes him impatient, and the niceties and the delays of the law make him impatient too, when he compares them with the simpler military justice. He can recognize that there is a civilian chain of command in government, and he can even see theoretically why it should be different from the military, but he is seldom wholly at home in it.

Clearly, a general's point of view



tends to differ in many respects from that of most citizens. Life has set him as much apart from the crowd as many ministers, headmasters and college professors. Though he would be indignant if it were pointed out to him, he has led an extremely sheltered life. Thus he has a great deal to overcome before he can mingle freely with ordinary boys and girls, but on the other hand, with the world situation now existing, most generals have been obliged to make the effort. Duty, in the last few years, has compelled them to address Rotary clubs and women's clubs and to shake hands freely with various assorted groups. The higher military echelons have had to confer with diplomats and Mayors and Governors and to pass compulsory courses in handling politicians and heads of other states.

Upon retirement generals now become vice-presidents and presidents of corporations, and some of them have done very well at these unfamiliar tasks. They have also had to teach college boys at university R.O.T.C.'s and to treat conscientious objectors and racial minorities with tact and gentleness and even to argue restrainedly with pacifist organizations. More significantly, during the war and post-war years they have had to associate closely and often cordially with large numbers of civilian officers, most of whom have looked as awkward in their uniforms as generals themselves look customarily in mufti. These recruits from the Outside, changed after hasty indoctrinations into military figures from having been lawyers, doctors, journalists, insurance agents and stockholders, have made a somewhat profound impression upon the modern military mind. They have in no real sense diluted or broken the *esprit de corps* of the regular service, but they have frequently dented it. In fact, of late the military mind has been compelled to cope with civilian eccentricities more intensively than it has for an entire generation. If in individual instances the results of this exposure have not been spectacular, they have been in others.

Many generals have become humanized of late from a civilian point of view, and some, while still in uniform, have made spectacular adjustments to civilian ways of life. The truth is, there comes a time when a highly successful man in any sphere



Benjamin Harrison was one of Sherman's officers on march to the sea.



Douglas MacArthur has had broad experience in the diplomatic-political field as well as in military matters.



Dwight Eisenhower has had broad experience in the diplomatic-political field as well as in military matters.

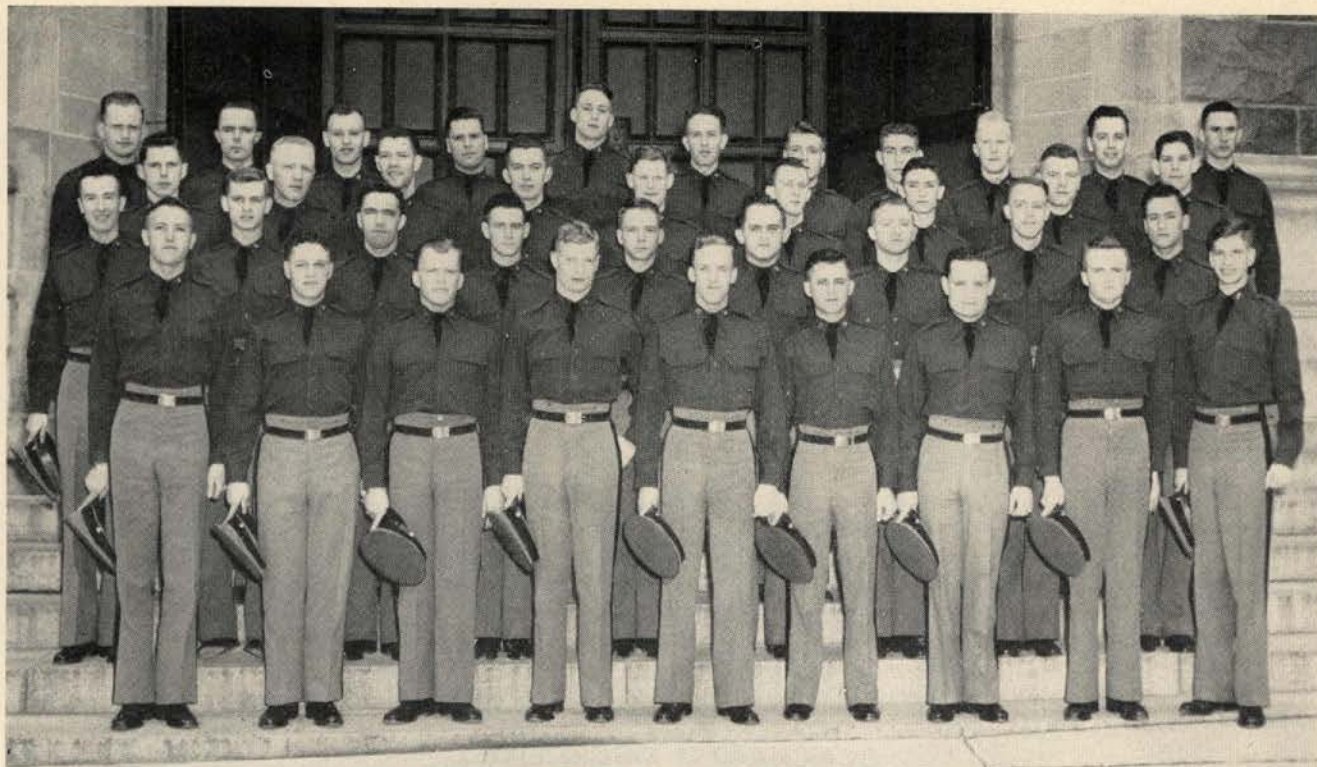
of activity is able to rise above the conventions of his profession until he is indistinguishable from other people. It may always be remembered that generals in the upper brackets are outstanding and many are superbly exceptional.

General Eisenhower, according to most observers, would seem to fall into this last category, and certainly millions of his fellow citizens believe that he has broken the West Point mold. Certainly, he has had exceptional opportunities to do so in the arduous postgraduate courses he has taken since he was a comparatively unknown field officer at the beginning of World War II. His duties have forced him to become a cosmopolitan and a diplomat as well as a soldier. He has had the opportunity to learn more about Europe and Europeans than any living American. He has consistently demonstrated organizational powers of the highest order. He has succeeded in the task set before him, through diplomacy and persuasion far more than through military directive. He has been able to use people wherever he has found them and to delegate authority in a way that betrays a deep knowledge of human beings in and out of uniform.

Few people in the service criticize superior officers if they know what is good for them, but there are groups who have served under him who don't like Ike. The worst they can say about him is that he is not a combat but a political general and a wire-puller. If he is, these very attributes, while not military virtues, may very well make him an excellent President of the United States in a confused period when dozens of factions and interests must be reconciled. Of course, as they say in the service, the battle is the payoff, and no one can judge the Eisenhower capacities unless he is elected to the office.

The present may be a time more than ever in the past that demands a military mind. The legal mind and the business mind and the reformer mind have their own peculiarities and defects. There should be nothing wrong with a military mind in the White House if it is sufficiently well educated for its task, broad-gauged enough and tolerant. An outstanding man is always outstanding no matter from what walk of life he may come—Army, Navy, or General Motors.





1st row, left to right: Malcolm E. Craig; Edwin J. Upton; Birtrun S. Kidwell; Robert S. Tickle; Richard D. Moore; James W. Mueller; Don Bradley; Harry L. VanTrees; Daniel W. Derbes.

2nd row, left to right: Stewart Paterson; John W. Sadler; Paul J. Brown; Lawrence H. Putnam; Peter C. Hains; John M. Misch; Corwin A. Mitchell; Edgar A. Gilbert; Lewis E. Beasley.

3rd row, left to right: Joseph R. Paluh; James M.

Peterson; Edgar B. McClung; John O. Bovard; John J. Lentz; Walter F. Ulmer; John H. Tipton; Craig Alderman; Albert N. Stubblebine.

4th row, left to right: James B. Reaves; Robert S. McGowan; Howell L. Hodgskin; Gordon M. Hahn; Arthur R. Stebbins; Joseph L. Jordan; Carl F. Dupke; Harold R. Lamp; Glenn H. Palmer; Joseph A. DeAngelis; Ralph M. Cline.

Not present: T. F. Cole.

## UNITED STATES MILITARY ACADEMY: CLASS OF 1952 ARMOR GRADUATES

Thirty-nine cadets in the 1952 graduating class at the United States Military Academy, West Point, New York, will be commissioned in Armor. The quota for the mobile arm of the ground forces was snapped up by cadets in the upper half of the class, which totals 553 cadets.

Cadet Harry L. VanTrees, top-ranking man in the Class of '52, chose Armor as his branch. The number five man, Cadet Edgar A. Gilbert, and the number nine man, Cadet Richard D. Moore, also selected Armor for their arm. Remaining selections of Armor were made from class standings ranging down to 262.

Branch quotas are allotted on a proportional basis to the graduating class at the Military Academy, and first classmen make their choices based upon class standing, as far as the respective openings go. Those further along in the standings must take what is left after those above them have made their selections.

Each of the Armor cadets received a personal letter of congratulations from Lt. Gen. Willis D. Crittenberger, President of the U. S. Armor Association, on behalf of the membership. Many have been Junior members of the Association and have applied for full active membership upon graduation.



*A careful review of the history of the tank is a necessary  
preliminary to operations on the atomic battlefield  
Mobility must be the basis of our doctrine, and its instrument  
must be insured against chaining to a foot-paced concept*

# The Ten Ages of Tank

by RICHARD M. OGORKIEWICZ

**T**HE routes by which tanks and armored forces have advanced during the past thirty-odd years have been many and varied. Of this, the present profusion—and often confusion—of facts and opinions is but one indication.

Yet, considered in broad outline, the whole development can be divided into a relatively small number of fairly distinct phases. These could well serve as a basis for classifying the masses of detail and systematizing the knowledge on the whole subject of armor. At the same time, they can help to clarify the different contributions to the present stock of ideas and help to assess the future worth of various concepts.

Thus, each one of these phases can be associated with a particular conception of the tank, a general recognizable trend or a group of characteristics. Each can also be identified with a certain chronological period, though these must not be regarded as rigid and mutually exclusive.

Common to them all is the back-

ground of the gradual evolution of the automotive vehicle and the steadily growing importance of the heavy, crew-operated weapons. This, of course, is particularly significant in connection with the origin of the tank, even though its invention (or synthesis) was more immediately connected with the particular conditions of the First World War.

## I. Trench Warfare

It was as a direct outcome of the trench warfare conditions into which the Western Front settled after the initial moves of 1914 that the processes which led to the first tanks started. The problem which these conditions posed was how to move in face of dug-in machine guns and barbed wire. The original answer to this proposed in England and France, the two countries in which independently but almost simultaneously development began, was on the lines of armored carriers for the transport of men and equipment over the bullet-swept no-man's land. On taking shape, however, the role of the armored vehicle was redefined, in particular in England, as that of a machine-gun destroyer and barbed-wire crusher

which would open the way for the infantry: partly as an alternative to field artillery.

In this role the very first British tanks went into action on September 15, 1916, on the Somme in France. Similar methods were employed in many later actions, usually of a local character, by both British and French tanks.

Such success as was achieved was due mainly to the effectiveness of armor protection, which enabled the tanks to disregard machine-gun fire. Thus, from the original ideas right through this first period runs the theme of mobile protection as the main characteristic of the tank—although the early tanks were by no means invulnerable. From this sprang the definition of the tank as a “perambulating fortress” and much of the later emphasis (and overemphasis) on armor protection.

The other legacy of this phase has been a tendency to regard the tank as some specialized piece of equipment and not a general means of increasing mobility. At first, of course, it was in the minds of many associated with the peculiar conditions of trench warfare. After the First World War,

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when a return to more mobile warfare was visualized, voices were not lacking that claimed the usefulness of the tank was over!

## II. First Massed Assaults

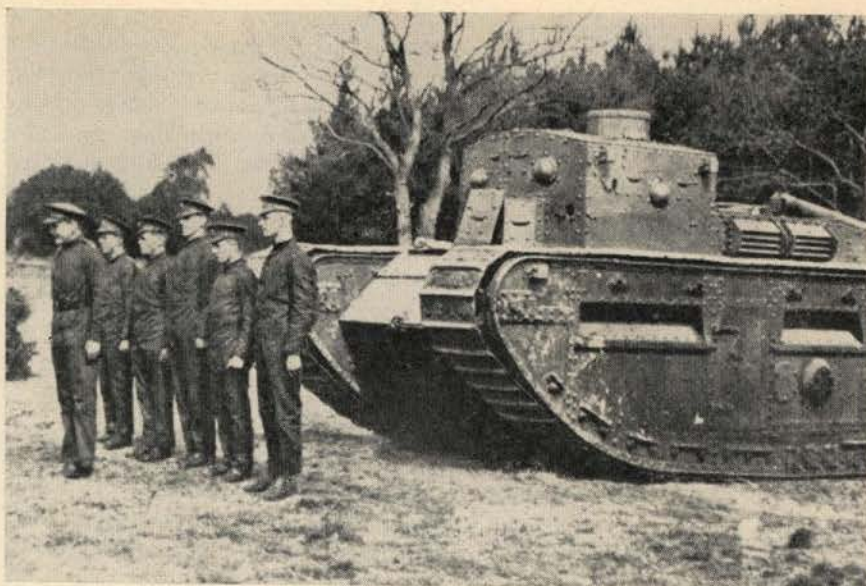
There were, however, some, both among the originators such as General Swinton in England and General Estienne in France and those who joined the first tank units, who saw the wider potentialities of the tanks. Particularly their capacity for surprise mass assaults with little or no preliminary artillery bombardment, which hitherto precluded all chances of tactical surprise. Proposals on those lines were in marked contrast to the early tendencies among Allied commanders to use tanks in dribbles in local actions. Also they necessitated the grouping of tanks in larger bodies, of regiment or brigade size, and careful planning by staffs familiar with the characteristics of tanks.

The British Tank Corps was the first to put these ideas to test. At Cambrai, in November 1917, no less than 474 tanks were used and for the first time they became the principal factor in battle. A spectacular breakthrough was achieved but, through lack of suitable means and technique, it was not exploited. Similar results were later achieved by the British at Amiens and by the French at Soissons.

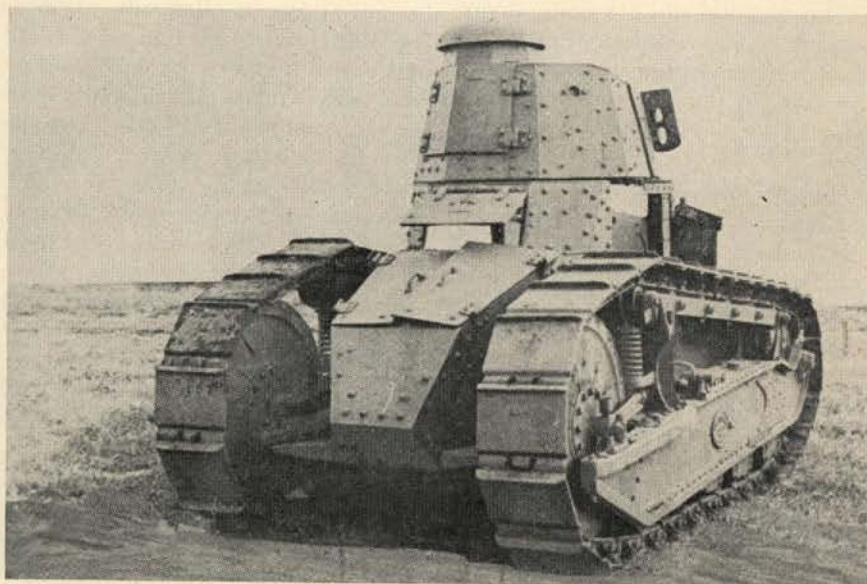
These battles demonstrated for the first time the potentialities of the tank as a means of breaking through hostile fronts and in the saturation technique of surprise mass assaults. They were still executed in close contact with the infantry, but tank units now operated chiefly for the benefit of higher formations.

The main problem, after that of the initial breakthrough proved capable of solution, was how to extend the action. Horse cavalry, which, it was hoped at first, would be able to exploit the breakthrough, proved quite incapable of it in all of the three main battles. The standard types of tanks, with maximum speeds of 4 or 5 mph, were equally incapable, though for a different reason.

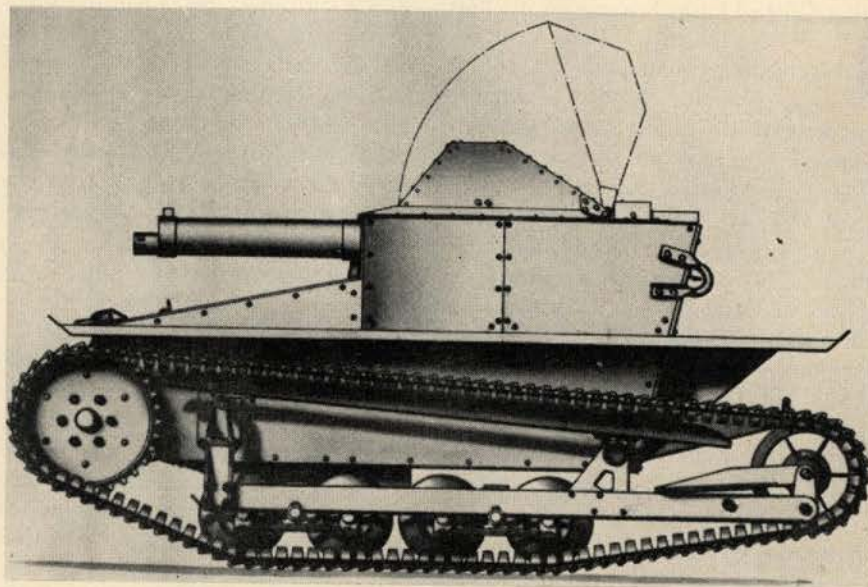
Faster types were, however, being developed by then and General Fuller (then colonel and chief of staff of the British Tank Corps) conceived the idea of deep tactical penetration by fleets of these mobile tanks. This was



British Medium C of 1919.



French Renault FT.



British Carden Loyd Mark VI Tankette of 1929.



embodied in his "Plan 1919," an operation to have been carried out by some 10,000 tanks, which was accepted in principle by the Allied C-in-C Marshal Foch.

Before any of this could be put into practice the First World War came to an end and the plan was never put to test. But the idea of the more independent employment of tanks remained. So did the record of the efficacy of tank units in the role of an operational battering ram. Both were resumed later but in the meantime other ideas prevailed.

### III. An Accompanying Role

In the immediate, postwar period it was France which had the strongest Army and the biggest tank force with over 2,000 tanks. This, together with various political and economic circumstances, added considerable weight to French ideas on the subject of tanks. Anyway, in the 'twenties they were adopted by virtually all other countries.

The original French conception of the tank was as a means of increasing the mobility of artillery—hence the *artillerie d'assaut* designation of the first French tank units. Or, later the mobility of heavy infantry weapons in the case of the lighter vehicles. In practice, however, the employment soon approximated that of the British "machine-gun destroyer" concepts and tanks were closely linked with the infantry.

After the war this connection was made official and permanent: the separate tank command was abolished in 1920 and tanks became an integral part of the infantry. Their role became that of accompanying the infantrymen, silencing hostile automatic weapons and opening a way through barbed wire and other obstacles.

In many ways the Renault F.T. type light tanks were suited for little apart from an accompanying role and there is little doubt that the existence of a considerable stock of them had a negative influence on any further development. But even when the Renault F.T., and similar tanks in other countries, were replaced by more modern designs there was little change in ideas on their employment.

They were organized in light tank battalions which were meant to be allotted to infantry formations in the ratio of one tank battalion to one in-

fantry regiment to form a *groupe-ment mixte*. Tanks were further distributed by companies to infantry battalions and, as laid down in the "Instructions on the employment of tanks" of 1930, they were to be regarded as no more than supplementary means placed at the disposal of the infantry, entirely subordinated to the infantry units to which they were attached.

Similar ideas prevailed in the United States, where the wartime Tank Corps was abolished by Act of Congress in 1920 and tanks became part of the infantry. The mission of the tank was defined as that of "facilitating the uninterrupted advance of the riflemen in the attack," and the majority of the tanks were held in divisional light tank companies.

The Russians also subscribed to such ideas, when they began to build their tank forces in the late 'twenties and early 'thirties. Their counterpart of the accompanying tanks were the N.P.P., or close infantry support, light tank battalions, one of which was attached to each regular infantry division. So did countries such as Italy, Japan, Poland and many others. In the late 'thirties even the British Army partially subscribed to these ideas.

It was in this role of an auxiliary to the infantry that tanks were used in all the fighting between the two world wars. The French operations in Morocco in the 'twenties, the Gran Chaco war between Bolivia and Paraguay, the Italian conquest of Abyssinia, the Japanese invasion of China and the Spanish Civil War all saw them in this role. So did the early stages of the Second World War, on the part of the majority of the French and Soviet armored forces, when these ideas were swept away, temporarily at least, by other, much more successful concepts.

In many ways this phase was a continuation of the first one: tanks were regarded as auxiliary and specialized equipment and acted mainly by virtue of their invulnerability to automatic weapons' fire. Their usefulness to the infantry was acknowledged but, at the same time, denied outside this sphere. With this, and an inescapable result of the importance attached to armor protection, went the belief that tanks met more than a match in contemporary antitank guns and, there-

fore, could only be used in close liaison with the infantry and the slow artillery barrages.

In fact, of course, such methods were best designed to expose tanks to the full effectiveness of antitank fire. As the German *Truppenführung* manual put it, "if the tanks are held in too close liaison with the infantry, they lose the advantage of their mobility and are liable to be destroyed by the defense." This was not meant to preclude the cooperation of tanks and riflemen but it condemned—and very rightly—the prevalent contemporary tendency to subordinate tanks entirely to the infantry.

The narrow and usually pessimistic views have appeared and reappeared several times, including the present. They can generally be ascribed to the tendency to approach the problem of tanks with rigid, preconceived ideas of how tanks should fit in with the older arms—particularly the infantry—instead of a rational analysis of the potentialities and limitations of the tank and other means, such as the .30 caliber rifle for instance!

Also, to the overemphasis on armor protection which leads to hasty conclusions that the tank is doomed every time some more effective armor-piercing weapon is introduced.

### IV. In Quest of Mobility

A notable exception to the views prevalent after the First World War was the British Royal Tank Corps. Although reduced to only four battalions, it was saved from the postwar fate of French and American tank units. Its independence and the possession of new tanks, the Vickers Mediums, with mechanical performance greatly in advance of anything previously built, created conditions favorable to further progress.

The independence and the early experiments were only achieved as a result of a hard struggle by a small band of enthusiasts against an abysmal lack of understanding and prejudice. The most prominent in this group of pioneers was General Fuller but it included others like Liddell Hart and Martel. Fuller's own ideas evolved from his "Plan 1919" and were on the lines of formations composed almost entirely of tanks. Their operations were to resemble those of fleets at sea—this "landship" influence, incidentally, being quite strong in all



the early British tank philosophy. Other arms were at best regarded as subsidiary.

Such "all-tank" views, which, of course, corresponded to the natural wishes of the Tank Corps, exerted a strong influence on the experiments carried out in England in the 'twenties and early 'thirties. The First Experimental Mechanized Force, assembled in 1927 on Salisbury Plain, was made up of several elements apart from tanks. But, by the time the Tank Brigade was put on a permanent footing in April 1934, it consisted solely of tanks: one battalion of light tanks and three mixed, light and medium, battalions. Tanks were regarded as virtually or potentially self-sufficient.

These British trials and experiments demonstrated for the first time many of the potentialities of fully mechanized forces. They also pioneered in the development of operational technique of tank units freed from the slow-motion infantry methods. Unfortunately, the development tended to be one sided, or at least unbalanced.

While great stress was placed on developing the advantages of mechanized mobility, striking power tended to be overlooked. This and financial stringency produced that crop of fast light tanks with very limited combat power. And while the strategic potentialities of mechanized forces were, rightly, stressed, the tactical limitations of the tank were glossed over. The result was that instead of being the versatile, dominating arm—as the exponents of the "all-tank" views originally claimed—tank formations developing on those lines became of somewhat limited utility. Suitable, perhaps, for the role formerly performed by the cavalry, *i.e.*, that of a complementary mobile arm. But, like the cavalry of the previous fifty or hundred years, incapable of really profitable participation in all stages of the battle.

Apart from this, the overenthusiasm of the "all-tank" views strengthened the other extreme school of thought which, quite irrationally, denied all value to tanks except when tied to the infantry. Thus both sides contributed something to obstructing the evolution of a new type of versatile field formation, in which tanks and other arms would *jointly* play their part.



French 35R Infantry Tank.



German Pz.Kpfw. III.



Russian T-34 Medium.



The British lead was followed in other countries and, in fact, it set off a kind of chain reaction in experiments with mechanized forces. In the United States, in 1928, a force similar to the British Experimental Mechanized Force was assembled at Fort Meade. This was followed, in 1931, by experiments at Fort Eustis and then, from 1933 on, at Fort Knox, inspired largely by General Chaffee. In France *exercices combinés* in 1932, in which infantry and cavalry mechanized units took part, and the mechanized cavalry experiments at Rheims in 1933 were also influenced by British developments. So were the roughly contemporary experiments in Russia and Germany.

Of all these, the results in the United States and in Russia most closely approached the British pattern: the 7th Cavalry Brigade (Mecz) and the Soviet Mechanized Brigades were composed almost entirely of tanks and although they were highly mobile their capabilities were limited.

#### V. Cavalry Tanks and Infantry Tanks

Similar results, but by a somewhat different process, were achieved in France. There the gradual mechanization of the cavalry began shortly after the First World War when motor vehicles began to replace horses. A little surreptitiously at first as emotional prejudices were strong! However, by 1930 cavalry divisions were almost half motorized and in 1934 the first fully motorized cavalry division was placed on a permanent footing.

This, the *Division légère mécanique*, in its organization, with a tank brigade, a motorized infantry brigade and divisional troops and services, had many of the characteristics of the later armored divisions. But, as regards its role and employment, it was still very much on the lines of the cavalry of the previous hundred years or so. Its main role was that of strategic reconnaissance and security for the benefit of the infantry formations; in other words only that of an auxiliary mobile arm.

Elsewhere a similar process of gradual, and at first only partial, mechanization of the cavalry was taking place in the 'thirties; the idea of mobile, mechanized forces taking over the role previously entrusted to horse cavalry was gaining wide recognition. It was

reached either by this gradual mechanization of the cavalry, as in the case of the French *Division légère mécanique*. Or, by the development of the mobility of the tank force combined later with a conversion of cavalry units to tanks, as in the case of the British Mobile Division of 1937 (subsequently renamed the Armoured Division).

But, if some tanks were considered useful for the cavalry role, others were still wanted to help the main body of the Army, which was represented by the infantry. In other words others were wanted for the harder task of combat in conjunction with the infantry. Put in this way, i.e., as specialized tasks, these demands gave rise to separate, specialized categories of cavalry and infantry tanks, which are a characteristic feature of this phase. Even in Britain, where previously close infantry support was not very seriously considered by the tank forces, special infantry tank units were formed after 1934.

As a consequence of this division and of the ideas that went with it, right up to 1940 the great majority of tank units in practically all armies was represented by the infantry accompanying tanks, which were to be used by platoons or companies to support small infantry units. Such were the French *bataillons de chars légers*, Soviet divisional light tank battalions, U.S. divisional tank companies, Japanese tank regiments, Italian *reggimento fanteria carrista*, and tank units of many smaller countries.

But as tanks improved and increased in number, and as their potentialities were slowly recognized, some of the infantry tanks, usually the more powerful types, were withheld for use at higher levels. Instead of acting for the benefit of infantry battalions or companies they were used at the level of division or corps, especially in breakthrough operations, where they would pave the way for the infantry and its accompanying tanks by destroying hostile guns and armor, or in counterattacks against hostile armor. This development could be seen most clearly in France where units of such tanks were designated the *chars de manœuvre d'ensemble*, in keeping with their role.

Grouping of units of such tanks, though at times only for administrative convenience, led to the organiza-

tion of higher formations of infantry tanks. Army Tank Brigades in Britain and Soviet Tank Brigades, each with 3 battalions of heavy tanks, are one example. With the addition of other elements, such as motorized infantry and artillery, some of these grew into full divisions, such as the French *Division cuirassée* and the Italian *Divisione corazzata*, both of 1939.

These infantry armored formations occupied something of an intermediate position between the infantry accompanying tank units and the mechanized cavalry. Their employment approximated very closely that of the tanks used in the first massed assaults of the First World War.

As time went on, however, and with other developments becoming known, ideas moved away from the narrow concept of a kind of operational battering ram. The wider possibilities were beginning to be recognized, in the case of both the French and Italian divisions for instance. Not only tactical striking power but operational mobility were beginning to be taken into account.

At the same time, in the case of some of the cavalry armored formations striking power was beginning to be considered in addition to mobility. There is little doubt that in time both types would have merged into a single, versatile type of mechanized formation.

However, by and large, right up to the early stages of the Second World War the division into the two separate categories of tanks stood firm. It then largely disappeared except, oddly enough, in Britain. There it was rigidly adhered to until 1945—with deplorable consequences in the shape of the two narrowly specialized categories of "cruiser" and "infantry" tanks. Particularly the clumsy and grossly undergunned "infantry" tanks.

It still finds supporters who arbitrarily divide tanks into the two separate categories, on the traditional lines of the division into infantry and cavalry, rather than accept the truism that a tank is a tank—whether it is used with the infantry or any other troops—and consider objectively its general characteristics.

In the past, when allowed full play, this division produced on one hand highly mobile but lightly armed and armored "raider" tanks and on the other heavily armored but slow and



clumsy "steam rollers," both of very limited utility outside their narrow spheres. If accepted, this division could not fail to produce similar results again.

## VI. The New Model Force

It was left to the Germans to be the first to do away with this division and to show in practice the way between the extremes of the "all-tank" views and the complete subordination to the infantry; also, the ultimate form of the cavalry light mechanized formations and infantry tank divisions. Others wrote about it earlier but it was with the creation of the first Panzer Divisions, in October 1935, that the idea of versatile armored forces first began to take practical shape.

For instance, already soon after the First World War General Estienne in France and Captain Liddell Hart in England advocated versatile, mechanized field armies made up of tanks, armored infantry and self-propelled artillery. So did, in the mid-thirties, General de Gaulle in France and General von Eimannsberger in Austria—though, contrary to popular belief, neither had any influence on the creation of the Panzer Divisions. As General Guderian, the foremost German tank theoretician and one of the organizers of the *Panzerwaffe*, put it, "it was Liddell Hart who emphasized the use of armored forces for long-range strokes and proposed a type of armored division containing tank and armored infantry units."

As in other armies, infantry and cavalry tried to subordinate tanks to their respective branches but the armored force managed to emerge untied to either—to the everlasting credit of the organizers of the *Panzerwaffe* and General Guderian in particular. It represented a new style fighting force of both greater mobility and greater striking power than the rest of the Army, based not on any preconceived ideas about the superiority of any one arm but on the potentialities, and limitations, of all.

For the builders of the *Panzerwaffe*, while alive to the potentialities of mechanized forces, did not lose sight of the tactical limitations of the tank. As a result, the Panzer Divisions, although based on tanks, represented a well integrated combination of several elements, including armored infantry, artillery and combat engi-

neers. Equally clearly was this trend to well balanced combat teams shown on the lower levels of *Kampfgruppe*, or "battle groups," organized temporarily on the battlefield.

At times, nevertheless, Panzer Divisions have been simply equated with the "cavalry type" armored divisions of other armies. And, as regards the equipment, there were indeed some similarities. Up to and including 1940 almost two-thirds of their tanks were light models of limited combat power. However, these were adequate to deal with the contemporary infantry which opposed them and the divisions contained a sufficient number of more powerful types, such as the Pz.Kpfw. III and IV, to be able to deal with hostile armor.

As for employment, while their most striking results were achieved by brilliant strategic exploitation they were by no means confined to this role. It is all too often forgotten now that the Panzer Divisions not only exploited successes but that they also usually fought out the necessary initial conditions for exploitation; and that they were as capable of smashing opposition as of rapidly outflanking it. As a 1940 German armored force training manual put it, the Panzer Division was especially suited for "rapid concentration of considerable fighting power, obtaining quick decisions by breakthrough, deep penetration on wide fronts and the destruction of the enemy." This was quite a different concept from that expressed, for instance, in an official British view that armored divisions were "designed for exploitation *after* the enemy's position has been broken."

Grouped in armored corps, and later armies, the Panzer Divisions formed the spearhead of the German Army in all of its *Blitzkrieg* campaigns. They delivered the main and decisive blows in Poland in September 1939, in France in May and June 1940, in the Balkans in April 1941 and then in Russia in the summer of 1941.

In the process they disposed of various tank units which opposed them piecemeal, each going about its own limited task. In France the Germans with 10 Panzer Divisions accounted for, one by one, three *Divisions légères mécaniques*, four *Divisions cuirassés*, one British armored division and many infantry tank battalions. In Russia, with 20 Panzer Divisions,

they routed numerous, and numerically greatly superior, Mechanized Brigades, Tank Brigades and divisional light tank battalions to the tune of some 18,000 tanks destroyed or captured!

## VII. Armored Warfare

The German successes in the first two years of the Second World War had a profound influence on the development of armored forces. To begin with, they literally swept away many of the older concepts which disappeared on the destruction of the French and of the bulk of the old Soviet armored forces. At the same time the German successes pointed out clearly how tanks and mechanized forces could be used to the greatest advantage and forced others to adopt similar methods.

Thus, in June 1940, in the U.S. Army the division into infantry and cavalry tank units was abolished by the creation of the Armored Force, whose main elements were to be the Armored Divisions resembling the German Panzer Divisions. The Italian *Divisione corazzate* had already closely approached its German partner, and in Russia, after the painful lessons of 1941, the different types of tank units and formations were replaced by a single type of versatile armored brigade. The British armored divisions also, whatever some of the official theories, in practice acted as versatile fighting formations, like the German divisions.

With these developments and with the rapid numerical expansion, armored forces became the truly dominant arm on the battlefields of 1941 and 1942. They were now used fully on all sides and whether the operations were carried out on the Russian plains or in the African deserts their outcome depended upon the success or failure of armored formations.

Infantry, on its own, when faced with enemy armor was hard put to it to defend itself and had to seek refuge in built-up areas or behind vast natural or artificial obstacles, such as extensive minefields. There it could defend itself but usually no more.

The growing importance of tanks and armored vehicles was reflected not only in the soaring production figures, the rapid expansion of self-propelled artillery, but in such very significant experiments as the reorganization, in





Japanese Type 97 Medium.

1942, of all British infantry divisions from the orthodox 9 infantry battalion pattern to one with 6 infantry battalions and 3 tank battalions.

Tanks themselves were at last adequately armed, a feature of this period being a rapid increase in tank armament. The move from smaller calibers to guns of 75 or 76mm on medium tanks being universal. It made up for a good deal of the neglect of armament of the earlier periods, which resulted either from the overconcentration on armor protection or on mobility. This arming of the tank with what were the effective weapons of the time made it at last into that effective combination of fire power and mobility which is the tank's first and most important characteristic.

Operationally, the period saw the great armored offensives and deep penetrations on the Eastern Front, the rapid thrusts of Rommel's *Afrika Korps* and Allied counteroffensives. Actions, too numerous to be listed in detail, where armored forces played the leading and decisive role and which are well worth studying. Unfortunately (those on the Eastern Front in particular, both during this and later periods) they have still received far too little attention.

#### VIII. Disappointments and Regression

To a certain extent the conditions in the main theaters of operations were, of course, particularly favorable to the employment of armored forces. Whatever the difficulties of operating in the extremes of temperature and the problems of logistical support, there is little doubt that both the Rus-

sian plains and the African deserts offered exceptional opportunities for highly mobile forces. When action shifted to other theaters many of these opportunities disappeared.

In Sicily, in 1943, and then in Italy, British and American armor found their movements severely restricted by the nature of the country which, at the same time, favored static defense. So armor began to operate much more cautiously, in small bodies and in close liaison with the infantry. In this way they were able to render very valuable service and operated over many kinds of terrain hitherto considered impassable for tanks.

But it was a far cry from the dashing and spectacular employment of the preceding years. And it is always one of the unfortunate consequences of a series of successes that any subsequent failure, real or imaginary, is apt to be greatly magnified. This is ex-

actly what happened with tanks. Many political and military leaders, commentators and, after them, the general public, military as well as civilian, having come to expect nothing but spectacular successes, jumped to the other extreme, that "tanks are finished," when these successes were no longer forthcoming. They were greeted with open arms by all those who, on traditional or emotional grounds, insist that infantry is still the one and only principal arm.

So armored forces were held back for some special occasion, when they could be used in the cavalry role, or tanks went back to supporting the infantry.

This was particularly true of the participation of tanks in the Pacific campaign. There, in the island hopping operations, only small bodies of tanks, of never more than battalion size, were and, in fact, could only be used. The Japanese produced an armored division in the Philippines but they too had made no progress beyond the idea of infantry-accompanying tanks and used the division up in platoon attacks.

Similarly, the initial employment of armor in the first phase of the Normandy operations was restricted, both by the difficulties of such an assault landing and the conditions of the bridgehead build-up.

Yet, in spite of disappointments and the generally pessimistic opinions, not all was regression. True, the methods used did not exploit fully the advantages of mechanized mobility—nor could this always be exploited for many reasons. But they were able to



U. S. M4 Medium.





German Tiger II.

demonstrate, even under the most adverse conditions, the capabilities of the tank as a means of increasing the effectiveness of the armament with which they were armed and which they carried forward with the infantry. In fact very often tanks, and self-propelled guns, formed the main source of striking power and the fire base for the infantry component of various battle groups, combat teams and task forces. At their best, these represented that ideal close tactical teamwork between the heavy weapons and the supporting riflemen so essential at this stage of technical and tactical development.

#### IX. Fire Power vs. Mobility

The apparent eclipse—for it was only apparent—of armor on the Eastern Front was brought about by somewhat different conditions.

After the costly failure of their offensive against the Kursk salient in July 1943, the Germans never possessed sufficient resources to mount a really large-scale action again. Their armored forces continued to render very valuable service, but in local counteroffensives or in blocking the penetrations by Soviet armor. They never had enough to resume large-scale offensive operations in which armored forces could demonstrate

their full potentialities, as before.

The Russians, on the other hand, had the numbers—the Germans identified no less than some 250 different Soviet armored brigades during the fighting on the Eastern Front. But they were slow in making full use of them and for a long time confined themselves to the bludgeon tactics of massed assaults.

But if the exploitation role of armor fell for a time into disuse and the armored forces lost for a time some of their glamor, their importance had not really diminished. They continued as the most effective form of striking power, in fact the only combination of heavy striking power and mobility. They were used both to deliver massive blows and swift counterblows and, when the necessity arose, even proved very effective in the defensive. The issues of major operations were still largely decided by the fortunes of tank and mechanized corps on the Soviet side and Panzer and Panzer-grenadier divisions on the German.

Striking power combined with mobility being the main attribute, attention naturally concentrated on increasing it further and making armored formations more powerful still, particularly to enable them to master hostile armor which always represented the greatest single threat. The

outcome of this could be seen in the shape of the heavily armed tanks such as the Tigers, Panthers and Stalins and in the armored battles when the Germans were being pushed back across Eastern Europe in 1943-44.

In the West, in the meantime, after the process of attrition wore down the German forces in Normandy, Allied armor was able to break out of the bridgehead and then exploit this by a series of spectacular advances across France and Belgium. Operating among shattered enemy formations Allied armored divisions were able to take full advantage of their mobility and were only stopped when they outran their logistical support. After the crossing of the Rhine, in the final stages of the war, Allied armor was able to repeat its exploitation performance and its total exceeded twenty divisions, American, British and French.

As a result of all this there was a revival of interest and faith in armor. It even seemed to restore it to something like the position it held in the seventh phase.

However, being associated with the particular conditions of exploiting a major enemy defeat, it was somewhat one-sided. Mobility was of greater, and striking power of lesser, importance than they would otherwise have been. Nor, in any case, did all this last long enough to make a sufficient impression on all the many skeptics.

It was, in consequence, less of a revival of the seventh phase than a return to the fifth where armor, in part at any rate, was regarded as only a complementary mobile arm. Complementary to the main body of the Army which consisted of the infantry.

It differed, therefore, from the views on German and Soviet armor which were looked upon as the main striking force, both more powerful and more mobile than the rest of the Army. These were the continuation of the seventh phase, though less spectacular and less mobile, especially by comparison with the Western Allies. However, they were much less behind in mobility than the American and British built tanks were, at that time, behind German and Soviet ones in armament.

#### X. The Basic Weapon?

On these two trends in ideas on the employment of armored forces ended





U. S. M46 Patton.

the development during the Second World War.

In the immediate postwar reorganization American and British armored divisions seemed to draw nearer to the German and Soviet concepts of increased striking power and away from the extremes of undergunned mobility. That is, going by equipment and organization. On the other hand, the very small proportion of armored divisions would show that they are by no means regarded as the main striking force of the field army. Presumably, then, still only as the complementary mobile arm?

At the same time, however, there has been a gradual extension of the use of tanks and in practice they are not restricted to any one limited role. For instance, the same types of tanks as used in the armored divisions now form an integral part of United States and of the better equipped Soviet infantry divisions. Some of these infantry formations, in fact, have as many tanks as some of the earlier armored formations—while at the same time armored formations have increased their infantry strength.

What the ratio of tanks to riflemen is, or should be, is in the first instance of little interest. What is important is their combined employment: while the infantry cannot, obviously, compete with tanks and self-propelled guns in fire power, the latter very often need the supplementary light fire and penetrating ability of infantry and combat engineers. The resultant growth of combined battle teams has already been mentioned.

Whether the different elements come from infantry or armored divisions is also, in principle, of little interest. In practice, of course, if they come from the latter they will have the obvious advantage of armored transport for the foot slogging elements and hence much greater overall mobility. Therefore, usually, greater effectiveness, though, at times, this may also be a disproportionate logistical burden—when the armored carriers cannot be fully used, as in the present airborne formations, for instance, or in other “light infantry” units.

How many of these battle teams will come from armored divisions and how many from infantry divisions is a question of Army organization, strategic concepts and logistics. A discussion of these, and of the details of operational employment and of the equipment, is outside the scope of this article. However, the desirability of having the maximum of units combining maximum striking power with maximum mobility, *i.e.*, armored units, for the main striking force of the Army is clear. And even if this ideal cannot be immediately or universally realized it is well to recognize it and bear it in mind.

As far as tanks themselves are concerned, the trends and implications seem equally clear: they are a general means of increasing the effectiveness of heavy, crew-operated weapons—at present weapons of 3 to 6 in. caliber generally—and the basic equipment of the potentially homogeneous field army.

But what of all the other views on the subject?

There are, for instance, those who regard the tanks outdated by various new armor-piercing weapons. This antitank chorus, in which military leaders, eminent scientists and others joined in, hit one of its periodic high notes just before the start of the fighting in Korea. The latest bogeys have been the bazooka and the recoilless rifle. But there were many others, of all shapes and sizes, before them and the conception of the tank which goes with these views does not seem to have progressed beyond the “perambulating fortress” of the first phase.

Then, there are those who still regard the tank as an auxiliary, fit only for the subordinate, limited role of infantry support. Their narrow views are almost matched by those who would consign the tank to some super-mobile arm—which itself, however, would only be a mere complement to the main body of the Army. Hence, the tank would become a special weapon of limited usefulness; going by past experience the kind of tank that is useful after an enemy defeat but little else.

In fact, the range of opinions just about covers all possibilities.

In support of each concept historical precedents and various, more or less relevant, facts are usually quoted, or can easily be found. To put all these in their proper perspective a thorough understanding of the whole tank development is essential; and not merely that of a fragment, as is all too often the case.



PRESENTED BY THE

# United States Armor Association



TO

**John Walt Lane**

OUTSTANDING SENIOR CADET IN ARMOR ROTC

AT

**VIRGINIA MILITARY INSTITUTE**

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President

**1952**

*William G. Bell*  
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*In these uneasy years following a world conflict America has faced a perpetuation of her role as the Arsenal of Democracy. A decade ago the cause was war—today it is peace. MDAP is a story of international cooperation in defense of our freedom*

## Security For the Free World

by MAJOR GENERAL GEORGE H. OLMSTED





**T**HE foreign policy of the United States has been summed up by President Truman as "the policy of peace through collective strength." The experiences of two world wars have made it clear that the free nations can only achieve world peace and security through mutually supporting strength. Present-day world conditions have made self-sufficiency a thing of the past. We are too dependent upon the other countries, as they are upon us, for all the things which a civilized, democratic nation needs to live, let alone to fight an aggressor.

Since the end of World War II we have not had the peace for which we hoped. The aggressive actions of Soviet Russia's leaders have posed a constant threat to the security of free nations and people everywhere. Consequently, the United States and other freedom-loving countries have worked together through the United Nations, the North Atlantic Treaty Organization and other pacts, to neutralize this threat of Soviet aggression. In cooperation with the other free nations, our country has sought to promote conditions of strength—economic, political and military—in the endangered countries of the free world.

A brief review of American foreign policy in the last five years shows clearly how we have worked to build up the collective strength of our friends and allies, based upon the principle of continuous self-help and mutual aid.

When the independence of the Greek and Turkish people was threatened in 1947 by communist aggression, economic and military assistance was dispatched which enabled the two countries to overcome their danger. This assistance was followed by the Marshall plan which gave to the European and other friendly nations the desperately needed economic aid to stabilize their economies and to start rebuilding their crippled industrial plant.

By 1949 the aggressive nature of Soviet communism had made it imperative for the threatened nations in the North Atlantic community to create defense forces strong enough to deter and, if necessary, defeat any armed attack from the East. The result was the North Atlantic Treaty, signed by 12 European nations (Greece and Turkey have since



**Major General George H. Olmsted, Director, Office of Military Assistance.**

joined) which pledged mutual support and assistance in the case of any attack upon a Treaty member.

When hostilities ended in 1945, the United States and many of the free nations, in good faith, had demobilized their armed forces and converted their arms production to civilian uses. But as the threat of Soviet aggression continued, many countries found their economies too weak to take on a rearmament program at the same time that they were trying to rebuild their homes and factories. Recognizing that the military strength of these countries was essential to our own security, Congress on October 6, 1949 enacted the Mutual Defense Assistance Act (MDAP). Under the provisions of this act, military assistance was made available to the NATO and certain other friendly countries to enable them to equip and train the forces essential for the collective defense.

The outbreak of the Korean War, however, convinced us we had little time to arm; that our weakness was inviting armed aggression by a hostile Soviet government. This fear of im-

minent danger was increased by the knowledge that the Soviet Union, unlike the West, had not demobilized its armed forces. Some 175 Red Divisions, 20,000 aircraft and 300 submarines were reported in combat readiness, posing a constant threat to the peace and security of the free nations. In addition, approximately 60 Soviet-trained divisions were reported under arms in the satellite countries. It was urgent that the armed forces of the free nations take immediate defensive measures to offset or neutralize the Soviet advantage.

To accomplish this as rapidly and as effectively as possible, it was decided to speed up and expand the rearmament of the countries of NATO and other free countries concerned. The first step was the appropriation of \$5.2 billion for military assistance for FY1951, followed by an additional \$5.7 billion last year. The passage of Mutual Security Act of 1951 provided for the supervision and coordination of all the U. S. foreign aid programs (ECA, Point 4 and MDAP) under the Director for Mutual Security, W. Averell Harriman. Its design was to strengthen the free world through a threefold program: (1) direct contributions to military security, mainly with military equipment; (2) provision of raw materials, commodities and machinery to our allies in support of the defense build-up; and (3) economic and technical contributions. Top priority in the Mutual Security Program was given to military aid and this has been reflected in the appropriations. This money is providing the weapons and means needed by the free nations to rearm.

The military assistance programs are developed and administered by the Department of Defense; the defense support and certain other economic aid programs by the Mutual Security Agency; and the programs of technical cooperation with underdeveloped countries (except in Southeast Asia) are administered by the Department of State. General supervision and coordination of the military, economic and technical aid programs are the responsibility of the Director for Mutual Security.

In Europe, the Director for Mutual Security is represented by Ambassador William H. Draper, Jr. As U. S. senior representative to the North At-

*Well over 3,000 members of our armed services are assigned to Military Assistance Advisory Groups in some twenty countries around the world. This type of duty will come to many of us as the program of collective security goes along. Familiarity with the program and attention to fields of language, history and current affairs will do much to enhance the value of such a tour to the individual and the country.—THE EDITOR.*





Armor plays a key role in the Assistance Program. Belgian, Dutch and Danish students receive instruction at the M46 Joint Tank School at Bourg-Leopold.

lantic Treaty Organization, Ambassador Draper represents the U. S. government as a whole, reporting directly to the President.

A coordinated, integrated U. S. organization is also set up at the national level for every country receiving aid under the Mutual Security Program. Known as the United States "Country Team," it is composed of all the various diplomatic, military and economic or technical missions which are engaged in foreign aid programs and functions under the direction of the resident American Ambassador or Minister. The military aid section of the "Country Team" is the Military Assistance Advisory Group (MAAG) which supervises and administers the military assistance program.

Primary responsibility and authority for the administration of military assistance is vested in the Secretary of Defense. The Office of Military Assistance, which operates under the Assistant to the Secretary of Defense for International Security Affairs, Mr. Frank Nash, is the Defense Department coordinating agency for the military aid programs. OMA supervises and coordinates the activities of the three military services which are responsible for the development of the programs, the procurement, and shipment of military end items and the implementation of the military training programs.

In Europe the military chain of command is through the U. S. military representative for military assistance in Europe, General Thomas T. Handy. He in turn is assisted by a joint military staff, the Joint American Military Advisory Group (JAMAG) through whom he exercises coordination of the military assistance programs for the various countries and command of the activities of the coun-

try level military groups (MAAG's).

At the country level, operations are carried out by the MAAG, a joint U. S. Army-Navy-Air Force mission headed by a general or flag officer. The members of the MAAG work closely with their counterparts in the armed forces of the recipient country and they have the responsibility for analyzing all requests for military assistance and recommending an equipment and training program for the country (in Western Europe these recommendations are coordinated by JAMAG). It is Defense Department policy that no military equipment be shipped to any eligible country until the MAAG responsible certifies that the country's armed forces are ready and capable of utilizing and maintaining the equipment.

Today there are some 3,300 U. S. personnel assigned to MAAGs located in the following countries: Belgium (also serving Luxemburg), the Netherlands, France, United Kingdom, Norway, Denmark, Italy, Portugal, Yugoslavia, Greece, Turkey, Iran, Thailand, Indo-China, the Philippines, Formosa and Indonesia. The first increment of a MAAG is now established in Saudi Arabia, and with the deliveries of grant assistance to certain Latin American countries, MAAGs will be established there.

MDAP is the chief instrument for achieving collective military strength.



Further along the peace perimeter members of the Greek forces attend a class and demonstration on U.S. equipment at Greece's Armored Training Center.

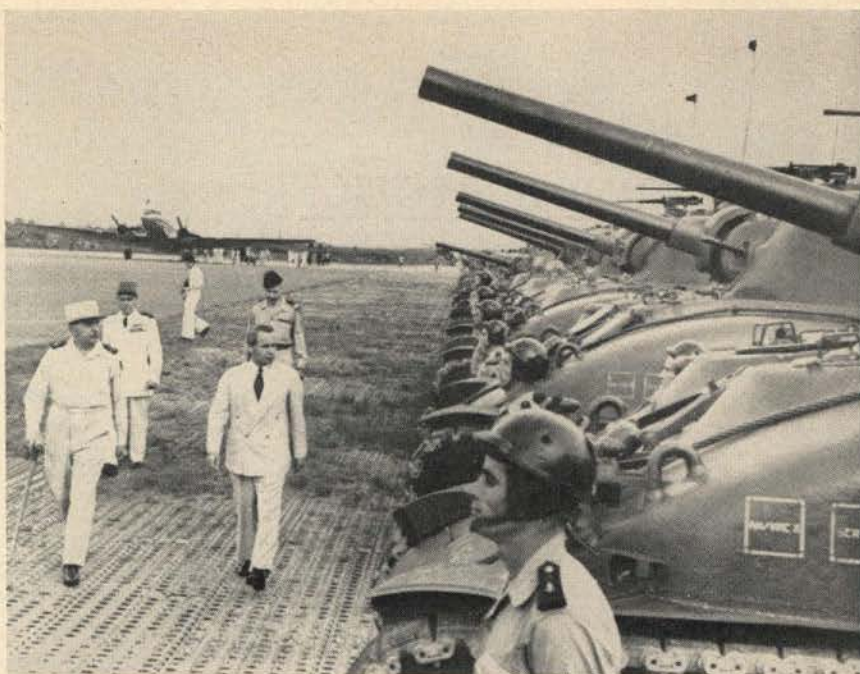


The U. S. furnishes to those nations whose security is considered vital to our own, two types of military assistance: (1) weapons and equipment; and (2) training and technical assistance. Besides the countries receiving grant aid, other countries who have made collective security agreements with the United States receive military aid on a reimbursable basis (Canada is primarily one of these).

As of the end of April we had shipped more than 3,000,000 tons of military aid, including more than 10,000 tanks and combat vehicles, 12,000 pieces of artillery, 42,000 motor transport vehicles, 812,000 small arms and machine guns and some 334,000,000 rounds of ammunition.

The training programs carried out under military assistance are extremely important in preparing friendly foreign troops to use and maintain MDAP equipment and in developing their combat readiness. During the past two years more than 18,000 foreign soldiers, sailors and airmen have been enrolled in U. S. Army, Navy and Air Force service schools. The NATO countries account for the bulk of these foreign trainees, although Middle East, South American and Far East countries are represented. One of the main training schools is the Armored School at Fort Knox, where many foreign soldiers have received U. S. instruction under MDAP. These foreign graduates of the Armored School have returned to their own countries as instructors, passing on to their fellow countrymen the lessons learned during their United States training. The training of this small nucleus is paying off in tremendous dividends in the thousands of Allied servicemen being trained in turn by these graduates of Fort Knox and other service schools.

In addition to the formal courses of instruction given in U. S. service schools, we have in the field more than 100 mobile training teams, equipped with training aids, films and mockups, who bring instruction directly to the armed forces of the MDAP countries. These teams, half military and half civilian, give on-the-job training in the use and maintenance of U. S. equipment. U. S. technical instructors, who are industry experts in fields such as radar, supplement the work of these mobile teams.



The French have used American equipment in the fight against communists in Indo-China. The late General de Lattre inspects a French unit using U. S. tanks.

The Mutual Security Program is not just a one-way proposition. As the name indicates, it is a mutual program, and the contribution of our allies is a sizable one. The largest portion of troops under NATO defense plans, for example, is provided by the European countries themselves, and by the first of this year they had expanded their armed forces to more than 2,400,000. From an equivalent of \$4.5 billion in fiscal year 1950, the European NATO countries had increased their defense expenditures to an estimated \$9 billion in the current fiscal year. Despite limited production facilities and critical economic problems, the production of military hard goods in Europe will reach about \$2.5 billion by the end of June—an increase over the previous year of approximately two-thirds. In addition, with

U. S. help, our NATO allies are building vital bases, airfields and other installations needed in our common defense program. Considering the lower standard of living found in these countries, as compared with our own, their rearmament and defense programs entail real sacrifices on their part.

American military assistance to a great degree has been responsible for the tremendous gains made in building up the NATO forces. The continuing flow of U. S. arms under MDAP will make it possible for the North Atlantic Treaty Organization to achieve its goal for the end of this year of 50 divisions, 4,000 aircraft and supporting naval craft. The past year was characterized by the organization and training of the NATO forces in Europe. This year will see their development into a capable, combat effective force.

The North Atlantic Treaty and the Mutual Security Program are the answers of the United States and the other nations of the free world to the threat of aggression by Soviet Russia and her satellites. In voluntarily entering into these agreements and arrangements for our mutual defense we of the free world reemphasize our faith in democracy and in the dignity of man and reaffirm our common determination not only to be free but to remain free.



Many languages, a common purpose.



# Breakthrough at **BELY**

by AUGUST-VIKTOR VON QUAST

**I**N November of 1942 the 376th Infantry Division (composed of older age classes) had been in position for about six months on both sides of Bely, several hundred miles west of Moscow, from Podvoyskaya through Bely-Simonovka to the edge of but not including Yemel-Yanova.

Adjoining on the northeast was the 144th Infantry Division with positions along the Obscha valley as far as and including Shisderovo.

Adjoining on the southwest were the 11th and 21st Jaeger Battalions extending as far as north of Demakhi, then Luftwaffe Field Division 15 in base positions in the swampy area extending to a point south of Shih-tovo.

*Organization of the 376th Infantry Division:* Three infantry regiments with three battalions each, one artillery regiment with three light battalions containing three batteries each, one heavy field howitzer battalion with three batteries, one engineer battalion; and one battalion of heavy field howitzers attached from GHQ troops.

*Assignment:* One infantry regiment was assigned a sector extending from and including Podvoyskaya to a point just east of Bely; one infantry regiment in Bely to a point about 2,000

meters southwest of Bely; and one infantry regiment with advanced position (one reinforced company) in Simonovka; and the bulk of the regiment in positions on heights northeast and northwest of Shiparevo.

Strength of the infantry companies approximately 60 to 80 men.

Bulk of the artillery in position south and southeast of Bely; one light artillery battalion north of Shaytrovshchina, one light artillery battalion northeast of Shiparevo.

Engineer battalion; one company in Bely, two companies as a divisional reserve.

*Position:* In the right and central sectors (Bely) there was a continuous, simple trench position with a continuous narrow barbed-wire obstacle; in the left sector there was an advanced position in the ruins of the village of Simonovka, a trench system with barbed-wire obstacle, and a main trench position with a weak barbed-wire obstacle.

*Supply:* The supply base was the Nikitinka station (which was, at the same time, a railroad terminal). There was one supply road through Vladimirovskoe-Bosino in the direction of the front and Bely and one supply road through Kleshnino-Sorokino in the direction of the front and Bely. There

was considerable partisan activity in the rear area, especially in the large forests. The supply situation was generally stable.

*Terrain:* Around and south of Bely, hilly; west of Bely, flat forests and swampy region. At the front as far as the area west of Bely there was a field of fire of 400 to 600 meters in depth, while north of Simonovka there was one of about 200 meters.

*Weather:* Winter weather, below freezing, snow 40 to 50 centimeters deep; during the day it was generally hazy, with fog in the morning and evening.

*Enemy:* A Russian infantry division, which had changed several times. Its light artillery was approximately equal to ours; its heavy artillery somewhat inferior. The Russians lay opposite the German front in well camouflaged and constructed positions.

Repeated hard and bitter fighting had been going on for the possession of Bely, the key point in the direction of the Smolensk-Vyazma highway. Since the middle of October the situation had been somewhat calmer with only isolated Russian attacks; Russian tanks had not appeared since that time. There was brisk patrol activity on both sides.

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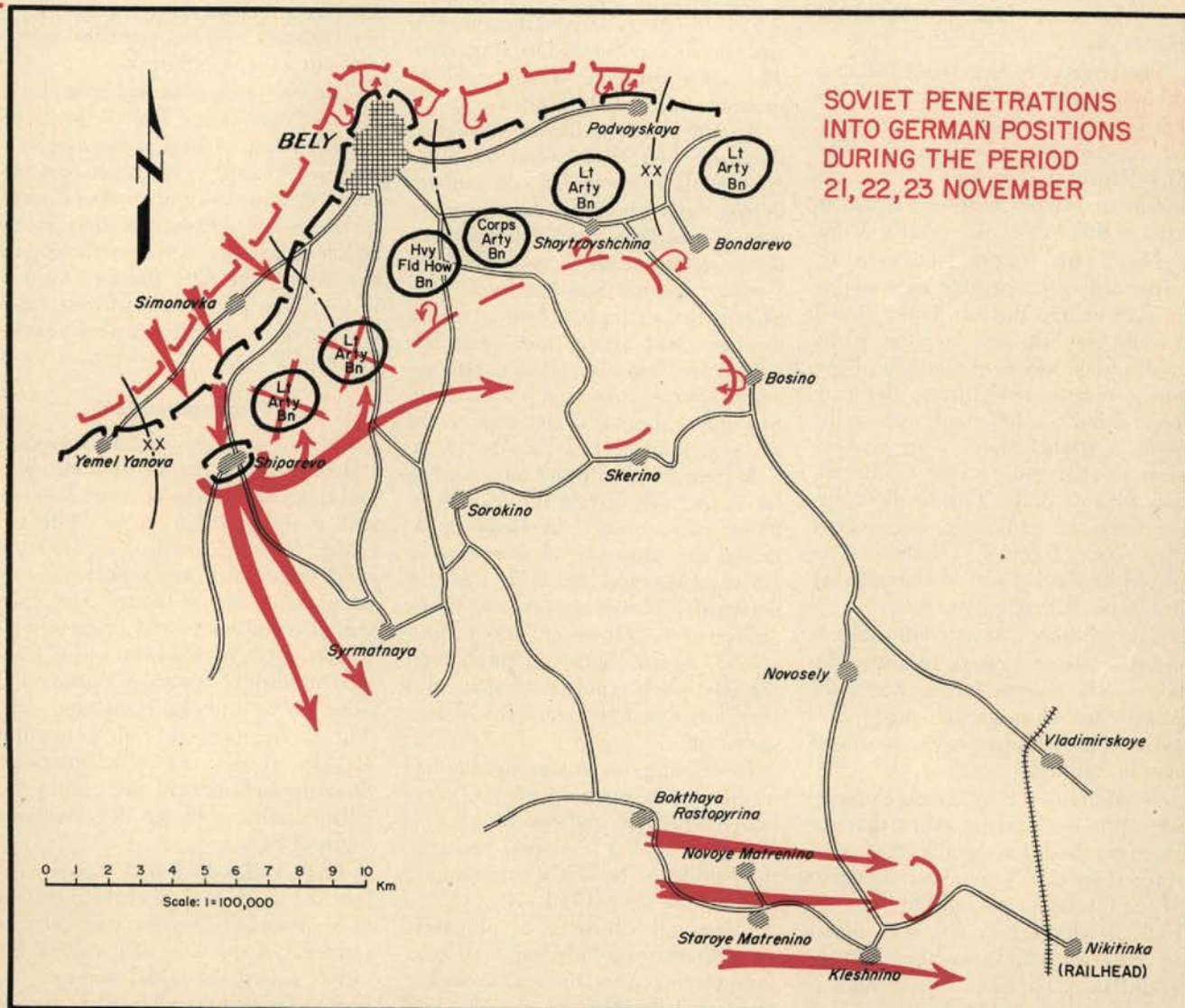


As early as the winter of 1941-42 strong Russian forces had succeeded in pushing through the German front, capturing Bely and advancing as far as the highway, which was temporarily blocked by German action. It was not until after sustained battles, which came to an end in May and June 1942 in Operation SEYDLITZ, that the Russians were driven back from the highway and the area as far as Bely was cleared and brought under our control again. These battles ended in the establishment of the Bely front. Out of the remnants of this Russian penetration were formed groups of partisans who hid themselves in the numerous large forests and maintained contact with the Russian front through the front west of Yemel-Yanova, part of which was occupied or fortified only in the form of strong points.

**August-Viktor von Quast** completed his cadet training in time to join the German Army in March of 1918 as an officer candidate NCO. He saw active service as a platoon and troop leader in the 2nd Kuerassier (Cavalry) Regiment on both east and west fronts. He was commissioned in 1922 and went on through various troop, school and staff assignments until 1938, when he was assigned to the 6th Panzer Regiment as a company commander. When World War II broke out he was Chief of Staff of the 2nd Panzer Division, stationed in Vienna. With this division he took part in the Polish, French, Balkan and Russian campaigns. In January 1942 he was transferred to XXXI Panzer Corps as Chief of Staff, and in 1943 to Fifth Panzer Army in North Africa as Chief of Staff. He was captured in Tunisia in May of 1943.

**21 November 1942**

In the morning of 21 November 1942 the Russians attacked Bely with about one battalion from the northeast and one from the northwest, each supported by artillery. They succeeded in making a few minor penetrations in the German main line of resistance, which the Germans succeeded in sealing off during the afternoon before the advent of darkness after committing the divisional reserves, approximately three companies. Throughout the day Russian artillery harassing fire was directed on Bely as well as on the artillery positions and on the main line of resistance at Shiparevo. About one hour before darkness, at approximately 1530 hours, the Russians launched a surprise attack on the advanced position with approximately six to ten tanks, and overran it. While the Rus-





sians were breaking into Simonovka, heavy artillery fire was directed from hitherto unknown batteries against the area between the advanced position and the main line of resistance in the Shiparevo sector and the artillery positions southeast and southwest of Bely. In about one hour the advanced position was in Russian hands. Only a few of the men in this position were able to get back to the main line of resistance during the night.

The surprise attack by tanks of the T-34 type, which were painted white and which carried mounted riflemen, came along a broad front, thus scattering the defensive fire. The tanks combed through the trench on both sides of their point of penetration by moving along the top of the trench and firing into it. Any men who had not been killed or had not fled were liquidated by the mounted riflemen. At the approach of darkness these tanks were followed by Russian infantry, who took firm possession of Simonovka.

The reserves of the 376th Infantry Division were pinned down by the fighting around Bely and were not yet available for redeployment. The XLI Panzer Corps had no reserves and in accordance with orders had to request them from the Ninth Army.

The 144th Infantry Division received orders to assemble all available reserves behind the left flank, so that it could commit them in time in the event of a subsequent attack on Bely, and so that by reorganizing the artillery behind the left flank during the night it could establish an artillery element that could assist in the engagement at Bely. This artillery element and the artillery in the sector of the 376th Infantry Division were placed under the unified command of the corps artillery commander.

The Ninth Army immediately made available a weak infantry battalion as a reserve, which was to be picked up during the night and moved up to Shiparevo by means of supply columns.

In addition, the following elements were promised in the event that the Russians should make a further penetration on 22 November: elements of the *Grossdeutschland* Division, the bulk of which, however, was unable to arrive until 23 November; and the 12th Panzer Division, which was supposed to reach Nikitinka with its ad-

vance elements by the evening of 22 November. Both divisions had been severely mauled, and had only about 50 per cent of their authorized personnel strength and matériel left, while not more than half of their riflemen and motorcycle units were motorized. The rest marched on foot or were moved by supply columns, or in shuttle movement. The 12th Panzer Division had about fifty tanks left.

*Plan for 22 November:* Counterattack from the main line of resistance at Shiparevo in the direction of Simonovka to regain the advanced position and prevent a Russian breakthrough from Simonovka eastward and thus an attack on Bely from the south.

## 22 November 1942

The night passed quietly. Reconnaissance in force toward Simonovka revealed that it was strongly occupied by the enemy.

The infantry battalion provided by the Ninth Army arrived on schedule and was moved forward to Shiparevo. The reorganization of the artillery proceeded according to plan.

Around 0700 the Russians attacked the main line of resistance at Shiparevo with heavy tank forces and infantry but without artillery preparation, smashed the attack assembly area of the regiment there, including the assigned infantry battalion, broke into Shiparevo and pushed farther to the southeast with strong tank forces followed by infantry. Additional armored forces turned eastward from Shiparevo, destroyed the artillery in the area southwest of Bely by an attack from the south and advanced as far as the hilly terrain north of Sorokino. Furthermore, the Russians attacked the main line of resistance at Podvoyskaya and on both sides of Bely with infantry supported by heavy artillery fire. However, all of these attacks, which continued throughout the day, were repulsed in spite of a few minor penetrations, which were sealed off.

By evening the tank group that had pushed southeastward from Shiparevo had reached the railroad terminal at Nikitinka with a few tanks and riflemen while the bulk of it turned north of Kleshino toward Hill 245.

West and southwest of Shiparevo the situation was unclear. All communications were broken, including those to Nikitinka.

In the sector of the 144th Infantry Division the Russians had also attacked with minor forces at several points, but were repulsed everywhere with heavy casualties.

When the breakthrough at Shiparevo began to take shape, the Ninth Army made the promised divisions immediately available, the *Grossdeutschland* Division and the 12th Panzer Division, and, in addition, promised the assignment of the 19th Panzer Division, which was supposed to reach the area southwest of Shiparevo by 0700 of 24 November. Its strength was approximately the same as that of the 12th Panzer Division. The tactical reserve of the 144th Infantry Division was assigned to the Nacha sector southeast of Bely, while on the southern margin of Bely a defensive front was formed out of stragglers, train and staff personnel and others.

All available supply units as well as the forward elements of the 12th Panzer Division were assigned for defensive purposes to Nikitinka.

The following plan had been made for 23 November: The elements of the *Grossdeutschland* Division which had arrived were to be moved forward on an eastward supply road and were to be committed south of Bely in an attack on Shiparevo to close the gap in the front. The 12th Panzer Division was to attack to the northwest from Nikitinka in order to clear the western supply road.

## 23 November 1942

On this day, too, the Russians attacked the main line of resistance several times at Podvoyskaya and Bely, as well as in the sector of the 144th Infantry Division, with comparatively weak forces, but were repulsed everywhere with heavy losses. The Russian armored forces and riflemen who had pushed forward into the hilly terrain north of Sorokino continued to drive on toward the north and east. The Germans were able to repulse attacks across the Vladimirskoe-Shaytrovshchina road and against the village itself and the artillery positions south of Bely.

The attack which had been carried forward south of Bely in the direction of Simonovka-Shiparevo with the first elements of the *Grossdeutschland* Division scored an initial success, but had to be withdrawn to the original



position in the later afternoon owing to heavy Russian counterattacks from Shiparevo.

By noon the tank attack which had been delivered with great élan in the morning by the 12th Panzer Division had led to the destruction of approximately two Russian armored brigades of T-34's on Hill 245 north of Kleshino. The situation in the forest northwest of Kleshino was still unclarified; there were Russian armored forces and riflemen there. The Russian forces which had advanced toward Nikitinka evaded the pressure of the 12th Panzer Division and bore off to the northwest. Nevertheless, there were fire duels at Nikitinka throughout the day with individual Russian tanks and small groups of riflemen, apparently straggling elements.

The situation southwest of Ship-

arevo was still unclarified. The 11th and 21st Jaeger Battalions reported through the Ninth Army that hitherto weak Russian attacks from the north-east and east had been repulsed. All positions were in friendly hands.

The 19th Panzer Division was reported approaching.

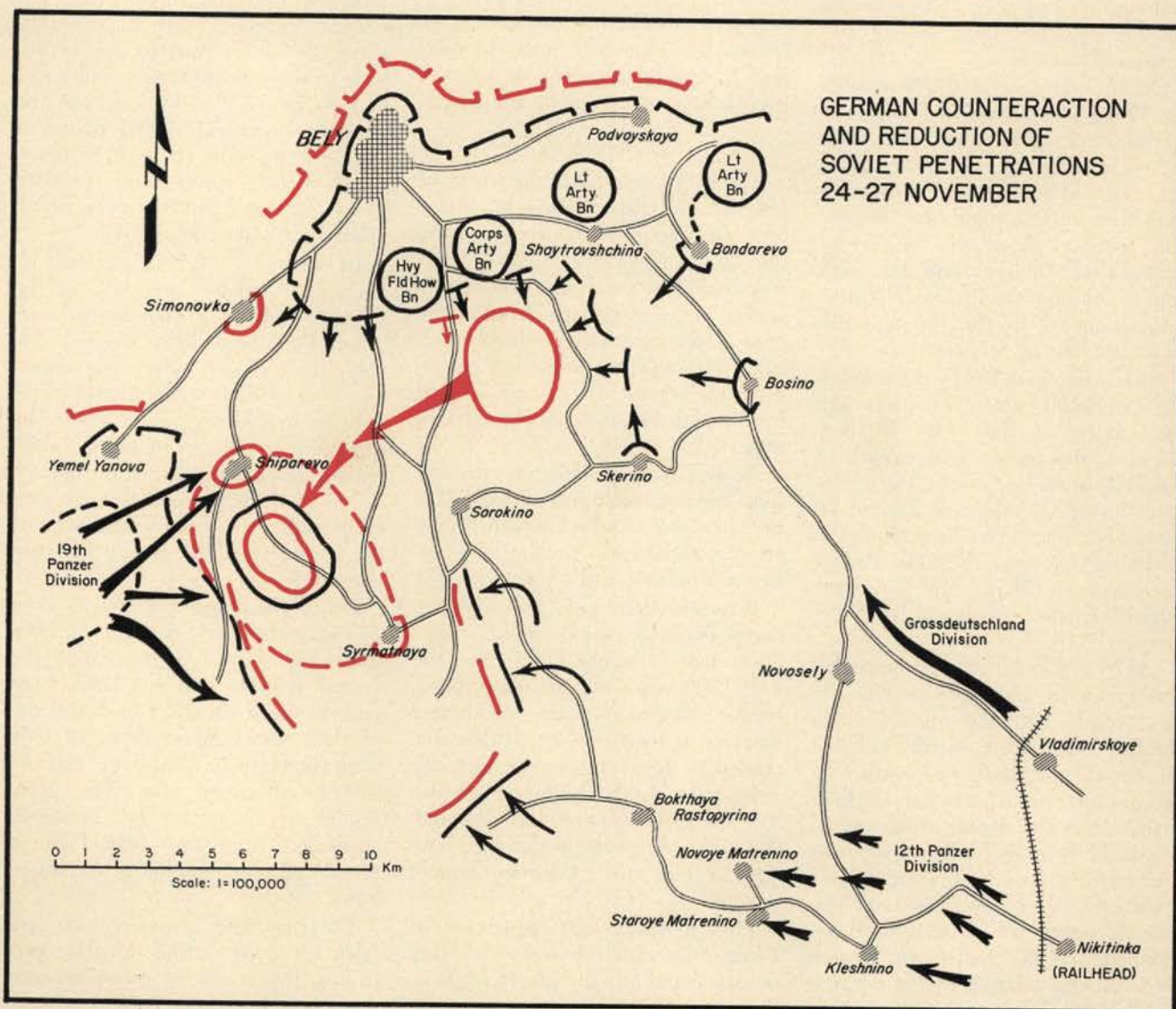
*Plans for 24 November:* The 12th Panzer Division was to clear the area northwest of Kleshino and push toward Shiparevo.

The *Grossdeutschland* Division was to hold its positions and, after the attack of the 12th Panzer Division became effective, was to attack in the direction of Shiparevo. The 19th Panzer division was to attack Shiparevo from the southwest and, in cooperation with the 12th Panzer Division and the *Grossdeutschland* Division, close the gap in the front at Shiparevo.

24 November 1942

In the sector of the 144th Infantry Division and at Podvayskaya and Bely the Russians continued their unsuccessful attacks. The *Grossdeutschland* Division reported large enemy movements from Simonovka in the direction of Shiparevo and from the hilly territory northeast of Sorokino toward Shiparevo. This division and the reserves of the 144th Infantry Division succeeded in driving the Russians farther out of the area northeast of Sorokino. However, the presence of heavy enemy forces between Bely and Sorokino was also confirmed. In hard fighting the 12th Panzer Division succeeded in gaining ground toward the northwest and in driving back the Russians in the direction of Syrmatnaya-Shiparevo.

The 19th Panzer Division, which had arrived according to plan in the





area southwest of Shiparevo, succeeded in hard fighting in temporarily capturing Shiparevo, but had to retreat to the edges of the forest west and southwest of the village in the evening under strong enemy pressure.

By evening, although the gap in the front at Shiparevo-Simonovka had not been closed, it was at least dominated again by our artillery.

*Plans for 25 November:* Closing of the gap in the front by a concentric attack by elements of the *Grossdeutschland* and the 12th and 19th Panzer Divisions.

Encirclement and destruction of the enemy forces south and southeast of Shiparevo and of the enemy group north of Sorokino.

#### 25-27 November 1942

On 25 November and the following days calm prevailed in the sector of the 144th Infantry Division and at Podvoyskaya and Bely. The Russians did not continue their bloody and unsuccessful attacks.

On the morning of 25 November the 19th Panzer Division finally succeeded in taking Shiparevo after hard, seesaw battles, thus closing the gap in the front and cutting the Russians off from their retreat route. In cooperation with elements of the *Grossdeutschland* Division and the 12th Panzer Division, the Russian elements were encircled in the forests south and southwest of Shiparevo.

After being attacked by elements of the *Grossdeutschland* Division and the reserves of the 144th Infantry Division, the enemy group north of Sorokino broke out toward the southwest during the night of 25 and 26 November, forced its way through the encircling forces of the 12th Panzer Division from the rear and joined the forces encircled southwest of Shiparevo.

On 26 and 27 November the pocket was gradually tightened and finally destroyed in hard fighting, in which the Russians tried repeatedly to break out toward the north and south. To prevent unnecessary losses on the German side in the dense, snow-covered woods, all the available heavy weapons and artillery had been concentrated together. After incessant and extremely heavy fire all resistance was crushed, and the pocket was cleared by tanks and riflemen by the evening of 27 November.

Statements by prisoners of war revealed that four armored brigades (T-34's) and six infantry brigades (so-called assault brigades) with heavy artillery had been ordered to force a breakthrough of the German front by way of Simonovka-Shiparevo, to break off Bely from the front from the south and then, pushing westward through Nikitinka, to reach and block the Smolensk-Vyazma highway.

In addition it was disclosed that in the final phase of the battle in the pocket southwest of Shiparevo the morale of the Russians had been worn down by the incessant fire of all our heavy weapons, and that their own heavy weapons, tanks and trucks had all been gradually destroyed. Russian officers stated that it had been their intention to break out toward the north or, if that should no longer be feasible, to the south, at the moment when the German troops began to comb through the forests. This intention was frustrated by our heavy, incessant fire, especially since the German troops did not advance into the pocket but destroyed it by fire power.

#### Conclusions

The Russians, who, in the winter of 1941-42, had already once succeeded by a deep penetration in dominating the Smolensk-Vyazma supply highway and thus paralyzing the supply system in one part of the front of the central sector, repeatedly strove to regain this objective in several large-scale operations. They were favored in this plan by the following circumstances:

At and west of Bely the Russian front was extremely close (about 70 or 80 kilometers) to the German supply artery, the highway and railroad between Smolensk and Vyazma.

Between Bely and the highway there are large woods and swamps (not easily recognizable on the 1:250,000 map), which made it possible for troops to disappear quickly and reappear at another point. If they succeeded in advancing to the highway here, not only the highway but also the Smolensk-Vyazma and Zhugino-Nikitinka railroads would be eliminated from the German supply system.

Here it was easier to penetrate the German front, which was very thinly occupied and at some places, such as, for example, in the swampy region

west of Bely, was only defended by a system of strong points and was not systematically fortified in depth.

The rear area was so thinly occupied, especially by battle-worthy units, that no particular resistance was to be expected.

Strong groups of partisans, of whom some had been recruited from deserters and stragglers from the time of the German advance on Moscow, and of whom some had infiltrated the thin German front, offered considerable support to the attackers, either by making surprise raids on German rear installations or communications, or by carrying out sabotage and espionage, or by active participation in combat.

The rapidity of the German advance was repeatedly offset by the fact that while our troops, in their pursuit of the Russians, had moved on or along the main highways and roads, the Russian troops had in part retreated into the forests and thus evaded capture. Thus, for example, there was still a Russian cavalry brigade in the forests between Nikitinka and Sychevka. In the long run the German command lacked troops of sufficient fighting strength to exterminate such units and partisan groups in this difficult terrain, which offered such poor visibility.

In particular the Russians took advantage of their superiority to the German soldier in winter warfare. Thanks to their slight sensitivity to cold, their frugal habits, the imperiousness of their weapons and motor vehicles to freezing temperatures, the superior cross-country mobility of their tanks, particularly the mobility of their T-34's in deep snow, they were generally superior to the German soldiers in winter warfare from the very beginning.

Before the engagements from 21 to 27 November the Russians had been extremely skillful in concealing the arrival of tanks and attacking troops and the assembly and adjustment fire of their attacking artillery not only from the German front but even from their own forward units. The preparations for the attack had remained concealed from the daily German visual and photographic air reconnaissance.

Deserters and prisoners who had been captured during the days preceding the attack in reconnaissance operations had never made any state-



ments concerning preparations for attack, reconnaissance activity, the presence of tanks or the like. Prisoners taken during the days of the attack said that the attacking troops had arrived fresh from the rear and had immediately been committed in the attack, while the troops who had previously been at the front were not sent after them until the attack had made some progress.

Moreover, the Russians made use of deceptions and surprises on this occasion, too. Thus, they attacked Bely—whose defensive strength they knew from former battles—without tanks on 21 November, nor was their attacking artillery in any way noticed by the German defense. This attack on Bely probably had the following objectives:

- To attempt to make a direct penetration into Bely by a double envelopment.
- To divert the German attention to Bely.
- To pin down the German reserves.
- To ascertain once again the deployment of the German artillery.
- To conceal the noises made by the tanks assembling for the attack on Simonovka.

It was not until their surprise attack on Simonovka in the evening that they revealed the presence of their tanks and allowed a part of their attacking artillery to commence action.

Tactically Simonovka was the initial point for an attack on Bely from the south, in the course of which the hilly territory around Shiparevo either had to be eliminated by artillery or else captured. The Russian command had decided on the latter course. Not until after Shiparevo was in their hands did elements of the attacking wedge turn eastward toward Bely and the artillery groups stationed south of the village.

The Russian attack seemed to have had two concurrent and simultaneous objectives during its first phase: To break Bely off from the German defense system and to push forward in depth.

By dividing their objectives in this way the Russians probably hoped to arrive sooner at their final objective, the supply route. If they succeeded in breaking off Bely as intended, the gap in the front would have become so great that strong forces would have been able to advance southward along a broad front, while on the other hand

the German command would have been prevented from closing the gap without making major preparations and bringing up strong reserves. The group which had advanced toward the south could have crushed any reserves hurrying up during the fighting at Bely in good time, or at least kept them from providing any assistance at Bely, and, on the other hand, by exploiting its initial surprise, gained ground toward the south and thus cleared a way in depth for the forces following them after the capture of Bely.

If the attacking forces had turned away from Shiparevo to the east with both attacking groups, that is, without a simultaneous plunge to the south-east, this might have led, according to German opinion at that time, to the fall of Bely within forty-eight hours. On the other hand, a southward thrust with all forces while screening the flanks with mobile groups might also have produced serious results if the Russians had succeeded in pinning down the approaching reserves in good time and pushing through with some elements to the supply highway.

What can have been the principal reasons why this attack, which was carried out with complete surprise and with strong forces, failed to achieve success?

Despite the deep penetration (for example, even the operations staff of the XLI Panzer Corps had been driven out of its command post by the fire of the Russian tanks on 22 November) the German soldier and the German command did not lose their nerve.

The German command was able to bring up reserves in a relatively short time and in astonishing strength in view of the conditions prevailing at that time. The speedy destruction of the Russian forces should probably be attributed to the commitment of these reserves and their determined will to fight.

After the first shock had been overcome, every village was stubbornly defended by the supply trains, and other units which were stationed in it. (The villages had already been hastily prepared for all-around defense in the preceding summer.)

The Russian command was apparently not entirely equal to the problem of a uniform command of the two

groups. Whereas on 22 November the thrust in depth from Shiparevo in the direction of Nikitinka was successful—the German supply trains, and so forth, in that area had been completely surprised and destroyed—the attack eastward from Shiparevo had not made as much headway as might have been expected. This was probably due for the most part to the stubborn German defense. Thus, for example, individual guns of the two light artillery battalions which were attacked and subsequently destroyed by the Russian tanks had continued to fight until they were attacked and run over by several tanks.

The group stationed north of Sorokino did not succeed in pushing into Bely during the fighting or in crushing the artillery south of the village, or in permanently blocking the eastward supply highway for any length of time. There should not have been any lack of forces for this purpose. The attack on Hill 245 by the tanks of the 12th Panzer Division at dawn on 23 November seems to have taken the Russians completely by surprise; moreover, the lack of fuel for some of the Russian tanks or the failure of their supply system may have been partly responsible for this.

This is the only explanation of why more than two hundred T-34's were destroyed by about fifty German Mark III's and IV's in a battle lasting approximately three hours.

Thanks to the destruction of a large number of the tanks in the Russian attacking groups, the German command succeeded in regaining control of the situation. Up to the end of the fighting on 27 November the Russian command was unable, on the whole, to escape the systematic German encirclement and subsequent tightening of the pocket, or even to achieve any new success.

After the encirclement and junction of the two Russian groups southeast of Shiparevo the Russian command seemed to have considered the fighting power of this group to be still so strong that no serious relief attacks were launched from Simonovka nor was any attempt made to transfer them. As captured officers stated, the Russians had intended to make a thrust northward on Shiparevo in order to reopen a gap in the front from the south, as well as a breakthrough toward the south.



However, since the pocket had been blanketed for more than twenty-four hours with extremely heavy fire from guns of all calibers without any German units pushing into it and thus relaxing the encircling pressure, it was no longer possible to carry out these plans. Most of the vehicles and heavy weapons, as well as the stocks of ammunition and fuel, were destroyed by this incessant fire or at least rendered immovable and no longer available for active service, quite apart from the heavy losses of personnel.

The Russians showed themselves extremely skillful in concealing an intended tank operation as long as possible from the German front. Whether single tanks or entire tank units were committed they were generally brought up at night and the noise made by their tracks was covered up by artillery harassing or surprise fire delivered by heavy guns. Tanks which had assembled in position were so well camouflaged that they often escaped the German air reconnaissance. The tracks left by tanks were made unrecognizable and advantage was taken of every natural cover and vegetation.

Just as the Russian rifleman was extremely skillful in camouflaging himself, his weapons and his position so that they could not be recognized from the air, the Russian tank crews knew how to make use of the terrain, vegetation and existing opportunities for camouflage to conceal themselves. The Russian tank soldier was persevering, tough, frugal, and insensitive to fire directed against his tank. Even when his tank was seriously hit or on fire he continued to fight to the last. This toughness of the Russian in battle, this shrewdness, cunning, frugality and the talent for blending into the landscape, that is, for rendering himself invisible to the enemy by rapidly constructing cover, are traits which have their roots and causes in the century-long serfdom and subjugation of the Russian people under a succession of rulers.

These basic traits have been reflected in Russian tactics, including even their tank tactics.

*The maps in these articles are consolidated from a number of detailed action maps and are designed for general reader orientation only.—Ed.*

## Army's New M47 Medium Tank Ready for Distribution to Armor Troops

(For additional data see front cover and pp. 32 and 33.)

The Department of the Army on April 16 announced acceptance of the M47 medium tank for delivery to tank troops at home and abroad.

Recently completed tests at Camp Irwin, California, and Aberdeen Proving Ground, Maryland, have shown that the modifications applied to the turret during the past six months stepped up the capability of the M47. Its hull is more heavily armored and its 90mm gun is of higher velocity than any other medium tank. Its range finder increases the probability of hits on a target.

Acceptance of this tank for issue to troops reaffirms the statement by General J. Lawton Collins, Army Chief of Staff, on January 14, in an address to the Armor Association, that the gamble taken in short-cutting, or telescoping normal development and production will pay off.

It took ten months from the initial decision to build to the actual production of tanks. Then came testing and elimination of the inevitable "bugs." Difficulties encountered in connection with the turret were serious for a time, but this fact was not allowed to halt or even slow up production. This calculated risk gave a production lead that is very important at this stage of defense rearmament, and gave rapidly a large number of tanks on which turret modifications are being made. In addition to resulting in a large number of new tanks, a considerable dollar saving to the taxpayer has been accomplished.

The now famous Patton medium tank, which has proved more than a match for any Communist armor so far met in Korea and is in high favor with our troops, was an interim design composed of the hull and turret of the wartime Pershing and a new engine-transmission combination. The M47 resembles the Patton outwardly, but the resemblance stops there.

The acceptance of the M47 means that two basic Army concepts have "paid off." One concerned the direc-

tion tank development would take after World War II; the other, a decision made after the fighting started in Korea as to what tanks should be built.

With the end of the war, the Army Research and Development budget was cut drastically. In one postwar year, a leading automobile manufacturer had a research budget that was five times the amount Army Ordnance had for its entire tank-automotive program (tanks, trucks, tractors, self-propelled artillery, etc.). Two courses were open at that time: Either to concentrate the bulk of the money available on the development of the major tank components, such as engines and transmissions, or to build a few complete vehicles each year. To follow the former course might mean that, should an emergency arise, the Army would have no proven designs of complete tanks. To follow the latter could mean complete vehicles with incompletely developed components. Since a tank is no better than its parts, the Army decided that it would be better to have modern components than a few brand-new tanks of obsolescent types.

When fighting broke out in Korea on June 25, 1950, the Army called a series of conferences to assay the tank picture. In the medium field several hundred World War II Pershing M26's were being converted into Patton M46's, the major change being the installation of a newly developed engine and cross-drive transmission "power-package"—one efficient result of the "component" risk. A completely new medium tank, the T42, was being designed, but the design drawings for the complete vehicle were not expected to be finished before November of that year. The M46 was considered a good tank, and it had the advantage of being a proven design. However, it was felt that to resume production on it would not be a step forward.

Since speed was vital, the second



risk was agreed upon. Design work on the turret of the T42 was complete. It featured a more lethal gun, a better fire control system (including a range finder), and better turret configuration. Since these were the major goals the Army was striving for in its new designs, it was decided to wed the T42 turret to what was basically the M46 hull. On July 17, 1950, the new tank termed the M47, was ordered directly into production, even though no complete design drawings of the vehicle existed. In so doing, the Army completely by-passed the usual mock-up, pilot model, and engineering and service board test and field test stages, jumping directly to the tooling-up phase.

Whenever normal, sound procedures are telescoped, as they had to be in the case of the M47, difficulties will be encountered. The "bugs" inherent in any new design, usually eliminated before a vehicle is ordered into production, remain to be dealt with later. Such was the case with the M47.

The first M47's started rolling off the line in May 1951, some ten months after the idea to produce such a tank was conceived. Range finders were not available at that time, so it was difficult properly to evaluate the new tanks. As had been expected, most of the troubles encountered centered in the turret. For example, the hydraulic traversing mechanism would function correctly in one tank, but would be deficient in another.

An analysis of the troubles indicated that they could be corrected by normal automotive processes without returning the tanks to the production line, so output was maintained. As fast as engineering tests could trace down the cause of a deficiency, a corrective modification was introduced in the tanks at the line. In December, range finders became available. In March 1952, firing tests of *complete* M47's were held, with the dual fire-control system functioning as it was designed to do. The accuracy shown by the M47 in these tests and corrections of the "bugs" led to its acceptance for issue to troops.

The Army feels that the risks taken on the M47 have proved wise. Despite the anxious moments—and hours—spent because of them, at least a year has been saved in the production of the new medium tank.



U.S. Army

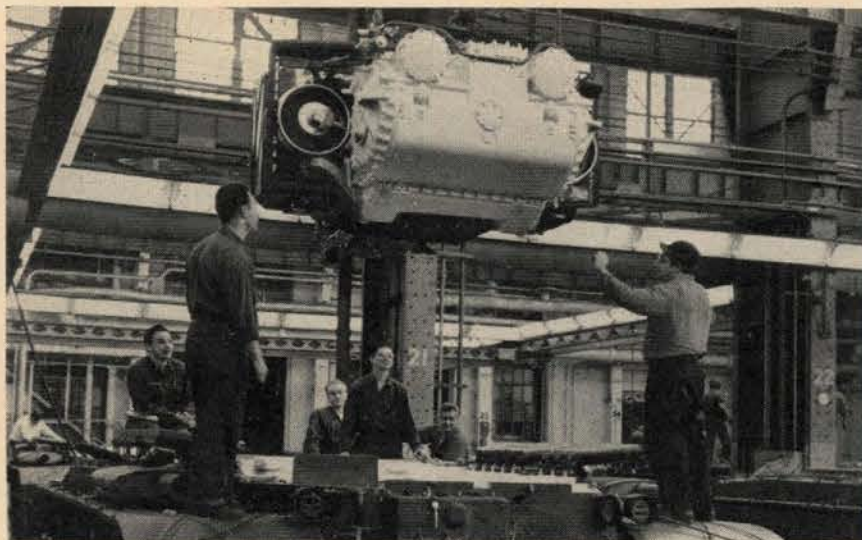
## BACKGROUND FACTS ABOUT THE ARMY'S M47 MEDIUM TANK

The M47 is the first medium tank to be turned out for Army Ordnance since World War II. It is the successor to the M46 "Patton" tank, which has performed successfully in Korea. In outward appearance the M47 resembles the Patton but contains many vital improvements affecting fire control, armament, armor, and reliability of engine and transmission. As yet the M47 has not been nicknamed.

Details on the M47 Medium Tank follow:

Weight	48½ tons when ready for action
Length (over-all, with gun in forward position)	28 ft
Height	10 ft
Width	11½ ft
Crew	Five men
Armament	90mm high-velocity Two (2) cal. .50 machine guns One (1) cal. .30 machine gun
Engine	Ordnance-Continental, air-cooled, gasoline 810 hp, V-12
Transmission	Allison cross-drive (combination hydraulic and mechanical)
Fire control	Electro-hydraulic, providing greater accuracy and speed in firing. Two separate fire control systems allow the 90mm gun to be fired by either the tank commander or the gunner.
Communications	Two-way radio transmitting and receiving equipment
Builders	American Locomotive Company in Schenectady, N. Y., and Army Ordnance's Detroit Arsenal.
Alco Tank Plant	Consists of two facilities—a primary manufacturing plant, covering 300,000 sq ft, equipped with powered conveyor lines and using modern production techniques. This plant was converted from existing production shops in five months. The second facility is a new modification and test center, comprising a 100,000 sq ft building and a mile-and-one-eighth test track. Cost of these facilities making up the Alco Tank Plant was only a fraction of the cost to the Government—and to taxpayers—of a completely new plant with the same capacity.
Alco Subcontractors	There are more than 2,000 subcontractors producing for the Alco tank program. More than 70% are companies with less than 500 employees. To supervise quality and insure production lead-times, Alco maintains a staff of expeditors and troubleshooters in the field.





The M47 power package is lowered into the hull. It includes the Ordnance-Continental 810hp air-cooled V-12 engine and the Allison cross-drive transmission.



At Aberdeen Proving Ground the M47 is put through severe testing by Army Ordnance personnel. Here a test tank is required to prove itself on a 40% grade.



To tankers the armament is the key item. Here's the kind of shot pattern turned in by the M47's 90mm high velocity gun firing at a target at an 800-yard range.

## NEW M47 MEDIUM TANK READY FOR ARMOR TROOPS

The new M47 medium tank weighs approximately 48 tons. It carries a crew of five. It mounts a 90 millimeter high velocity gun. The power plant is an improved Ordnance-Continental air-cooled 810 horsepower V-12 engine, which, in combination with the Allison cross-drive transmission, gives a flexibility of operation which will enable the M47 to outmaneuver any known enemy tank on the battlefield. Accepted by the Army on April 16th, it is coming off American Locomotive Company and Detroit Arsenal lines.

### WHAT FEATURES MAKE THE M47 SUPERIOR?

1. Increased probability of a first round hit.
2. Higher velocity gun—more lethal, more effective.
3. An automatic compensator restores the aim of the gun after each round so that no manual adjustments are needed to correct for the effect of recoil. Consequently, a higher rate of fire is possible.
4. Two separate and distinct fire control systems allow the gun to be fired by either the gunner or the tank commander. If, for example, the range finder system is knocked out and the gunner wounded, the commander can take over, using the supplementary periscope system. In normal operation, the commander can override the gunner if he sights a better target.
5. Greatly improved field of vision—targets can be spotted much more quickly.
6. Armor protection has been improved to make it more difficult for an enemy shell to get a "bite."
7. The M47 retains the Patton's ability to stop on a dime and spin in its own length; in short, its ability to outmaneuver any other medium tank.



"Many hundreds" is the figure released concerning production on the M47. This view of finished tanks at Alco's plant will please the using arm.



The turret goes on an M47. The gun is operated by two separate electric hydraulic fire control systems. Tank commander or gunner can operate the weapon.



At the American Locomotive Company Plant in Schenectady, N. Y., each tank coming off the line receives a 45-mile "shakedown" before Ordnance gets it.



A test vehicle is put through the paces at Aberdeen Proving Ground where a rough course on tracks, suspension and power plant tests its maneuverability.



# Federal Recruiting and Drafting In the Civil War

by DR. FRANCIS ALFRED LORD

**A**T the outbreak of the Civil War the military forces of the Federal government consisted of a standing army and militia, but neither was prepared for the extremely difficult task of overcoming the resistance of an excellent fighting force operating in an area of roughly one million square miles. The Regular Army, which had had combat experience in Mexico a decade before, was a well disciplined force dispersed over the United States. This army, numbering only 16,402 men on January 1, 1861, was reduced by the resignation and desertion of 313 commissioned officers or approximately one-fifth the total strength.<sup>1</sup> Such a force was obviously incapable of crushing the revolt of a determined people who had 401,395 men in the field by the end of the first year of the war.<sup>2</sup> The role of the Regular Army throughout the war was really divided between acting as a "token force" in the field and serving as an officer pool. Unfortunately, it never was permitted to concentrate on either of these roles and the contribution of the Regular Army toward winning the war must be found in the higher command echelons. It did not function as a significant training or fighting element.

The militia, mostly unorganized and numbering more than 3,000,000<sup>3</sup> was weak in fighting potential. What little training the militiamen received was antiquated and discipline was poor. With the exception of a few "crack" units such as were found in the larger cities, the militia regiments were no better than their inglorious predecessors had been at Camden and Bladensburg. The Northern people were not military-minded and had never come to appreciate the value of training and discipline for their militia. A few of the States had made preparations to get their militia ready before hostilities began. For instance we find that for three months prior to the attack on Sumter the Massachusetts Volunteer Militia, "in anticipation of some great traitorous movement in the South,"<sup>4</sup> drilled almost nightly in their armories. Governor Andrew issued

his "General Order No. 4" on January 16, 1861, which placed the militia on a wartime footing. As a result of this order certain companies dropped from their rolls men unfit or unwilling to serve and accepted replacements.<sup>5</sup> Even before these preparations in Massachusetts the New York State Legislature extended the service of the State militia to President Lincoln to be used as he deemed best "to preserve the Union and enforce the Constitution and laws of the Country."<sup>6</sup> Pennsylvania, Michigan, and Massachusetts were equally prompt.

The reaction in the North to the attack upon Fort Sumter was instantaneous and widespread. Mobs went about New York and elsewhere forcing suspect newspapers and private dwellings to display the Stars and Stripes. The garrison from Sumter met with a hearty reception when it reached New York. Officers and men were carried on the shoulders of crowds wild with enthusiasm. The great city's streets were decked with banners.<sup>7</sup> For a short time dissenters were discreetly silent.

To meet the challenge of insurrection the President called on the States for 75,000 militia for a period of three months. The legal basis for this call of April 15, 1861, was found in two ancient militia acts, those of February 28, 1795, and March 3, 1803. The 1795 act empowered the President to call forth the militia of any State or States "whenever the laws of the United States should be opposed or the operation thereof obstructed in any State, by combinations too powerful to be suppressed by the ordinary course of judicial proceedings, or by the powers vested in the Marshals by this Act."<sup>8</sup> By this act no militiaman could be compelled to serve more than three months in any one year. The 1803 law provided for the calling out of the militia in the District of Columbia for the maintenance of law and order within the District alone.<sup>9</sup> Under this 1803 law the President issued calls in April for three regiments, but many of the men refused to take the oath of allegiance for fear they would thereby become regular soldiers. However, they were reassured that they were merely militia and were not sent out of the District.<sup>10</sup> It was popularly believed that the war would be of short duration. The Federal government was weak at this period of the war as evidenced by its complete lack of military policy. Secretary of War Cameron, a political appointee, was incapable of administering his office. The States took the lead in the first effort to raise troops since the Regular Army was too small and too greatly dispersed

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*The turmoil over universal training, selective service drafting, recall of reserves, periods of service, and other related doings, is by no means new in our country's military affairs. These things have been going on periodically since the firing of the shot heard round the world. Here is a story of our trials and tribulations in another generation and another century.*

to be of use. Although regular officers like Sherman firmly believed that such troops "never were and never will be fit for invasion,"<sup>11</sup> the Northern States responded enthusiastically to this first call to arms and recruited their militia regiments very rapidly to full strength. Under the call of April 15, 1861, the States raised 91,816 men.<sup>12</sup> Even then, some governors were insisting that the Federal government call many more regiments, and in some cases, for longer periods of time than ninety days.<sup>13</sup>

These demands by State governors were backed by a seemingly irresistible advance in the military program of the enemy. In Baltimore the passage of two Northern militia regiments (6 Massachusetts Infantry and 7 Pennsylvania Infantry) was disputed by civilians hostile to the Federal government. Federal forts and arsenals within the Southern lines were seized; railroads and telegraph lines were cut; the Capital was in a state of siege, and communication with the outside world was possible only through the medium of private messenger. It seemed as if 1814 was to be repeated. To prevent such a disaster the President on May 3, 1861, issued a proclamation whereby the Regular Army was to be increased by 22,714 officers and men, and the Navy by 18,000 seamen. In addition, he called for 42,834 volunteers. This meant an increase of ten regiments of regulars and forty regiments of volunteers.<sup>14</sup> Although the call provided for a Regular Army of 42,000 men, enlistments in this force were disappointingly few and by December, 1861, when the volunteers already totalled 640,000 men, the total of the Regular Army was only 20,334.<sup>15</sup>

In those early months of the war before Bull Run the Federal government could have accepted a much larger volunteer force, but the war matériel for additional troops was lacking.<sup>16</sup> Hundreds of thousands of volunteers offered their services in 1861 but were turned away by this unfortunate situation. Not only did the States function as agencies in raising troops, but sometimes individuals tried to raise and proffer regiments or even brigades directly to the President. Usually these individuals were prevented by their respective governors but Daniel Sickles, ex-diplomat and society man, succeeded in raising the famous Excelsior Brigade in New York and took it directly to Washington. The brigade lost half its men by the vicissitudes of war before President Lincoln finally overrode Sickles and credited the regiments to New York.<sup>17</sup>

While the volunteers were pouring into State rendez-

vous camps the three-month militia received their baptism of fire in the Battle of Bull Run, July 21, 1861. The men fought bravely but lost the battle late in the day. These men have never received the credit they deserve; they served for a short period only and saw little action but they did give the Federal government time to catch its breath in the almost impossible task of forming an army out of raw material. Bull Run was the inevitable answer to the clamorous "on to Richmond" but the people were rudely awakened and the fervor of recruiting which so characterized the spring fell off sharply. It is true that the quotas under the 1861 calls were substantially oversubscribed but the distribution was very unequal. Some New England States and such States as Delaware and Maryland failed to fill their quotas.<sup>18</sup> There was a slight increase in recruiting during the winter of 1861-1862 due to the seasonal slackness of labor in the agricultural regions. But the increase was not sufficient for attaining the goal set by General McClellan, who assumed command after Bull Run, and hence it was necessary to resort to special appeals, extraordinary financial inducements and even covert threats of possible future drafts in order to stir up the laggards. The reasons given for prompt enlistment were: it was a noble cause; the pay was the highest in the world; the rations and supplies were good; and weapons were unsurpassed.<sup>19</sup>

An order of December 3, 1861 placed recruiting in the hands of the War Department. By March 31, 1862, the army consisted of 23,308 regulars and 613,818 volunteers.<sup>20</sup> The militia is not included in these figures except in the cases of those militia units which had become "federalized," that is, had come under Federal control. Then they were in the same category as regiments of volunteers raised for service in the war. On April 3, 1862, recruiting for volunteers was temporarily halted.<sup>21</sup> Officers and men returned to their regiments from their detached duty at recruiting offices; the offices themselves were closed down; and the public property belonging to the volunteer recruiting service was sold to the highest bidders, the proceeds being credited to a fund for collecting, drilling, and organizing volunteers.<sup>22</sup> To replace the men lost by Grant at Shiloh and McClellan on the Peninsula it was necessary to re-establish recruiting, which was done by an order issued June 6, 1862.<sup>23</sup> The shortage of men continued, however, and in May and June special authority was granted to the States of New York, Illinois, and Indiana to



furnish men for three months of service. Under this authority New York furnished 8,588 men, Indiana furnished 1,723, and Illinois furnished 4,696.<sup>24</sup> The reinforcement of 15,007 three-month troops would obviously be meagre in the light of what was transpiring on the Peninsula and on other fronts. More men were needed at once.

The President and his cabinet were gravely concerned over the military situation in general and that of the Army of the Potomac in particular. Now realizing that a new call was imperative, they reached an agreement which resulted in a War Department order published July 2, 1862, calling for 300,000 volunteers.<sup>25</sup> By this call the States raised 421,465 men for three years.<sup>26</sup> The caliber of men responding to this call was exceptionally high. The reason for this high type of volunteer coming forward in response to this call is not difficult to ascertain. He had not enlisted in the spring of 1861 because he was bound by domestic and economic ties that were not as easily severed as were those of the less stable elements that were usually found to predominate in the militia units that responded to the earlier calls. Those who were well established in society and who did try to enlist in 1861 were quite often turned away because of lack of arms and equipment had sharply curtailed the number of regiments permitted each State. Domestic and foreign sources had largely remedied these deficiencies and the men could now be accepted. In an article entitled "Recruiting in the City," which appeared July 15, 1862, the *New York Times* described the situation in many places in the North at that time:

There was a brisker business done at the recruiting offices yesterday than on any day since the issue of the President's requisition. . . . The men who are coming forward are far superior, on the average, to those who have filled up the regiments that went from the State last winter. They are mainly men who seem to be acting, not from impulse, or necessity, or in the belief that they will have an easy time of it, but from conscientious motives of patriotism; volunteering freely, under the full comprehension of the serious nature of the work they will have to do, and with the determination, by this volunteering, to, if possible, end the struggle quickly and effectually.<sup>27</sup>

### The Cream of the Crop

The first great outburst of patriotic enthusiasm had subsided. War was no longer romantic. The Federal armies were being depleted by battle casualties and disease; maimed veterans were observed more often in the northern cities and rural areas. One veteran who responded to this July call pointed out that it required a good deal of courage to enlist in the Federal armies under this call. "The men who responded were not Bohemians, nor mere seekers for a better fortune. They were mostly fixtures in society . . . They were men who could not have been bought from wife, children, and the family home of generations for one hundred or one thousand dollars. And such men were the overwhelming majority of the three-years' volunteers of 1862."<sup>28</sup> President Lincoln's call of July 2, 1862, for 300,000 three-year troops was a very severe drain on the North. It absorbed the best fighting element, the grand reserve force of the country. After this reserve force had been enlisted in the armed services no later call ever produced men of equal caliber.

As was so often the case throughout the entire war, however, some States were less co-operative in their support of the war effort than others. This was especially true

in the raising of men. In some localities volunteering was not as enthusiastic as it should have been. The Federal government finally decided that a draft would be necessary to provide the requisite number of troops. The Southern victories in this stage of the war can be partially attributed to the fact that the Confederate Congress had passed universal conscription as early as April 16, 1862.<sup>29</sup> The Federal government proceeded slowly along the path of an out-and-out conscription of the manpower of the country. On July 14, 1862, Congress passed a law whereby the President could call out the militia for a period not to exceed nine months with quotas apportioned to each State. By militia was meant all able-bodied male citizens between the ages of eighteen and forty-five.<sup>30</sup> This was merely a revision of the old 1795 militia law and was not a draft administered by the Federal government. States were allowed to draft if they so desired; the main interest of the government was to get the men. The military situation was chaotic; it was becoming obvious that Pope was not going to be able to check Lee. The significance of the Law of July 4, 1862 is that it allowed a draft by the States based on executive interpretation rather than direct legislative sanction. It was also the first step taken by the executive department of the Federal government toward recruiting under authority of this law and the 1795 law.

### Sword of Damocles

The War Department issued a call on August 4, 1862, for 300,000 militia to serve for nine months. This number, which was in addition to the quota of July 2, 1862, stipulated that if any State should fail to meet its quota of the additional 300,000 by August 15th, the deficiency in that State would be made up by a special draft from the permanent militia.<sup>31</sup> A general order dated August 9, 1862, listed those who would be automatically exempted, including all telegraph operators and maintenance personnel, engineers, artificers and workmen employed in any public armory or arsenal, members of Congress, the Vice President of the United States, customs officials, postal officers and stage drivers, the merchant marine and all persons exempted by the laws of the respective States from military duty.<sup>32</sup> As yet, however, there was no such thing as an actual draft in the North. The detailed provisions for the draft were without any direct legal sanction and would have been impossible to enforce in unwilling States due to the lack of sufficient troops at the disposal of the central government. The draft was not intended as the main source of manpower but rather as a whip to encourage volunteering.<sup>33</sup> It was intended that the draft should raise 300,000 militiamen for nine months and that it should round out the quotas of the call of July 2, 1862, in addition to providing replacements for the old regiments. This last provision was authorized by an order appearing August 14, 1862.<sup>34</sup> As a means of raising men directly, the 1862 draft was unquestionably a failure. Out of quotas of 334,835 men only 87,588 men can be accounted for by this draft.<sup>35</sup> The draft was valuable, however, in that it acted as a sword of Damocles over certain States, especially in the West, whose leaders in July were dubious about their ability to meet their quotas but who in the end managed to come through with flying colors. The quotas for the calls of July 2 and August 4 totalled 669,670 and the number raised was 509,053, thus showing a



deficiency of about 25%.<sup>36</sup> At first glance this deficiency seems quite startling in its implications, but there were about 87,000 three-year volunteers over and above the quota of the first call.<sup>37</sup> That the calls of July and August were so well answered was also due to the fact that the rush season in agricultural regions had passed and there was the usual surplus labor population seeking steady employment. The nine-month call was little more enticing than the three-year call since the majority of the population still believed the war would be of short duration.

In studying the draft of 1862 one is disappointed to note that the futile system of short terms still prevailed. Nine months was not too much of an improvement on three months as far as actual service to the country was concerned. The good features of the experiences of 1862 that carried over and were utilized in 1863 were twofold: only Federal officers should conduct the draft, and military service should be for a period of at least three years. Two especially vicious practices appeared as a result of this draft law of July 17, 1862, practices that were so to alter the entire Northern recruiting program during the rest of the war that the splendid patriotism of the best type of volunteer has been permanently besmirched as a result. These practices were those of Federal, State, or local bounties and the purchasing of substitutes to serve in place of drafted men. In addition to the hundred-dollar Federal bounty, there were numerous State and local bounties. That the Federal bounty was of material assistance in getting men is proved by the fact that there were many more three-year volunteers than nine-month volunteers. Only the former received the bounty. A widely read paper of the day, in discussing the bounty question on August 16, 1862, said in part:

The system of indiscriminate bounties for recruits to meet the Presidential requisition for 300,000 men to fill up the National armies, is already and none too early recognized as vicious, wasteful and demoralizing. The mistake of attempting to organize new regiments before the old ones are filled up is also recognized, and the plan abandoned . . . Let the conscription be just as Heaven, and inexorable as death. All that is worth living for is involved in the issue of the contest in which we are embarked. Let it spare neither high nor low, rich nor poor, but reach all alike.<sup>38</sup>

No better proof of the lack of unity and purpose in the Northern war effort is needed than to study how completely unrealized was the ideal of universal conscription as advanced in this newspaper article. It is difficult today to understand why Northern leadership could not comprehend the necessity of drafting men by a fair system of selection, that is, to force men to serve rather than to permit them to pay substitutes to serve in their stead. That the war might easily be a long one began to dawn on the more thoughtful statesmen when they heard of the sickening slaughter of Burnside's men before the stone wall at Fredericksburg or when they studied the dilatory tactics of Rosecrans at Stone's River.

#### For the Duration

Only a week after the end of the latter battle, however, Congressman Buffington of the House Committee on Military Affairs read a majority report which urged authorization to raise 20,000 volunteers to serve for *nine months* in Florida. Fortunately the opposition was unable to discern

the wisdom of singling out Florida as the theater of operations for these particular men. Nor could the opposition approve nine months as the term of service for these men when "three years or during the war" was becoming accepted as necessary for enlistment.<sup>39</sup> The House Committee was certainly not cognizant of the general military situation. In the East the morale of the Army of the Potomac was at low ebb due to Burnside's inept leadership at Fredericksburg. Also responsible for this low morale was the famous Mud March of the following month, when in a torrential rain the Army of the Potomac floundered in impassable roads for a few days and returned to its camp completely demoralized. Resignations and desertions became commonplace.

In the West affairs were little better. An officer writing to his wife on January 22, 1863, commented bitterly on the poor quality of the officers and then went on to state that in his opinion:

Nine-tenths of them enlisted just because somebody else was going, and the other tenth was ashamed to stay at home. As they all pretend to be ill whenever there is anything to do, it is impossible to tell whether anything is the matter of a man until he is ready to die. One lover of his country in my company receives an honorable discharge who has never done thirteen cents worth of work for the government, on account of feebleness and yet who has never seen a day when he didn't eat his full rations, and when he wasn't able to whip two like myself.<sup>40</sup>

#### Introduction of Conscription

Possibly the largest single factor in this widespread demoralization consisted of the Northern military reverses accompanied by very severe casualties amounting, since the passage of the July 2, 1862 law, to about 75,000 men, killed, wounded, or missing.<sup>41</sup> Unlike the Confederates, who had kept their ranks better supplied by a relentless conscription policy, the Northern authorities had not yet supplied an adequate replacement system. The average Confederate regiment was much more efficient than the average Federal regiment, an inevitable result of the pernicious system practiced by the North of raising new regiments instead of keeping the old ones up to strength. Since the spring of 1863 was certain to inaugurate another campaign in which the losses in manpower were to be considerable, a system to replace those losses had to be found. The idea of conscription began to be favorably received by several important legislators, including Aaron A. Sargent of the House and James A. McDougall of the Senate. Even Horace Greeley, who in the spring of 1862 had been bitterly opposed to the employment of conscription by the Confederacy, could reason in August of the same year that since the South had started conscription it was honorable for the North to follow its example.<sup>42</sup> As was to be expected, however, the antiadministration Democrats opposed the draft from the start and continued to do so throughout the war. Despite this resistance, Senator Henry Wilson, chairman of the Committee on Military Affairs, introduced a bill to enroll and call out the National forces; this bill was finally passed on March 3, 1863. By "national forces" was meant all able-bodied male citizens of the United States and all aliens who had declared on oath their intention of becoming citizens, between the ages of twenty and forty-five. There were three classes of exemptions: first, those physically or mentally unfit for service and persons convicted of a felony;



second, a restricted number of officials including the Vice President of the United States, Federal judges, Cabinet members and State governors; and third, sole supporters of aged or infirm parents or of orphaned children. Those liable to service comprised two classes: first, all men, married or single, between the ages of twenty and thirty-five, and all unmarried men between the ages of thirty-five and forty-five; and second, married men between the ages of thirty-five and forty-five. This second class was not to be called out until the first class was exhausted.<sup>43</sup> To administer the draft a separate bureau of the War Department, namely, the Provost Marshal General's Department, was set up under the leadership of James B. Fry, an officer of exceptional ability.

The enrollment act itself contained some good provisions. Among these should be mentioned the care taken to arrange for as equitable a distribution of the burden of the draft as possible, with only a few exceptions. The drafted men were to receive the same pay and Federal bounty as did the volunteers. All drafted men were to receive ten days' notice so as to eliminate any possibility of their not knowing that they were to be drafted. The men raised were to be used in organizations where they were needed; the old habit of raising new regiments in order to pay off political debts was to stop. Strict observance of regulations governing medical examinations was ordered, but not followed.

### The Negative Factors

On the bad side of the ledger we must note, first, the inadequacy of the medical examination, which was to prove almost disastrous in the later stages of the war when depleted regiments received as replacements men who were literally blind, syphilitic, and idiotic.

Second, there were no provisions for industrial exemptions although it must have been obvious that a great determining factor in the outcome of the war would be the industrialization of the North against the agrarian economy of the South. But probably the worst feature of all in the enrollment law was the system of substitution. For varying sums a man to be drafted could provide a substitute, that is, he could pay another man to go in his place. So great was the demand for substitutes that a familiar element in the war was the substitute broker, who has been defined by James A. Garfield as:

A man who establishes an office and offers to furnish substitutes for different localities. He pays bounties and gathers men in gangs for sale, and when the committees of any town are hard pressed to fill up their quotas they send to the substitute broker and buy his wares at exorbitant rates. He gets men for comparatively a small bounty and sells them at enormous prices to the districts that are otherwise unable to provide their quotas. The result has been that men in all parts of the United States have been compelled to see their sons bought and sold by these infamous substitute brokers.<sup>44</sup>

As if the substitute feature of the law were not bad enough, the law also permitted men who were to be drafted the privilege of purchasing exemption by paying a commutation fee of three hundred dollars. From this source alone the Federal government received fifteen million dollars in the first draft.<sup>45</sup> It was not without reason that the poor could maintain that the war was a "poor man's fight." Of 292,441 names drawn in the first draft only 9,881 were held to personal service. The remainder

paid commutation, furnished substitutes, did not report after being drafted, or were exempted for physical defects and similar reasons.<sup>46</sup>

Under the President's proclamation of June 15, 1863, pertaining to militia to serve for six months, the States furnished 16,361 men.<sup>47</sup> This call was made during Lee's second invasion of the North. The seriousness of those weeks preceding Gettysburg was well expressed when the *New York Herald* pointed out that there could no longer be any doubt that Lee's whole army had crossed the Potomac into Maryland and Pennsylvania, that a grand scheme of invasion of the North was now fully developed, and that a decisive battle could not be long delayed.<sup>48</sup> Interestingly enough, the same paper contained the following notice: "How to avoid the draft—a few more good men wanted for Company H, Eighty-fourth regiment New York State Militia, for thirty days. Headquarters Central Hall, corner of Centre and Grand streets, Cap't. Graham commanding."<sup>49</sup> However, the militia's contribution to the victory at Gettysburg was absolutely nil.

### Supply and Demand

On October 17, 1863, Lincoln called for 300,000 volunteers for three years.<sup>50</sup> This was followed February 1, 1864, by an order for a draft of 500,000 including the calls of 1863, also for three years.<sup>51</sup> These two calls netted 369,380 men.<sup>52</sup> On March 14, 1864, still another call was made, this one for 200,000 men for three years,<sup>53</sup> which resulted in the raising of 292,193 men for the Federal army.<sup>54</sup> Besides the foregoing additions, between April 23 and July 18, there were furnished 83,612 one-hundred-day militia out of a quota of 113,000.<sup>55</sup> All these and more were desperately needed by the armed forces of the nation, especially in the Army of the Potomac where the casualty lists were assuming alarming proportions due to the "fight it out on this line if it takes all summer" tactics of Grant. In the campaign from the Rapidan to the James, Grant's loss was 54,926 men, a number roughly equal to Lee's whole army. To supply these and other losses a call was issued on July 18, 1864, for 500,000 men (reduced by excess of credits on previous calls to 357,152) to serve one, two, and three years. This call was oversubscribed, 386,461 men being furnished.<sup>56</sup> Although there was the usual poor quality of replacements in this call as in all the 1863 and 1864 drafts, there were some new regiments raised that were of good material. In September, Pennsylvania raised a division of six regiments and the recruits comprising them were a "husky, healthy lot of young men, varying in age from 16 to 22 years . . . drawn from professional occupations and trades, and agricultural life . . . men of intelligence and culture."<sup>57</sup> These men performed very capably in action later due to excellent leadership. The last call for troops during the war was made December 19, 1864, when 300,000 men were called to serve terms of one, two, and three years. By the time military operations ended the following spring 212,212 men had been raised.<sup>58</sup> When Lee's army surrendered, thousands of recruits were pouring in, and men were discharged from recruiting stations and rendezvous in every State. The national military force on May 1, 1865, numbered 1,000,516 men.<sup>59</sup>

(To be concluded)



## OUR ARMY—177 YEARS OLD

On 14 June 1952 the United States Army will mark its 177th birthday.

The Army is the oldest of our Armed Forces. It is the only element that has existed continuously since 1775. It came into being a year before we became a free nation, established by the Continental Congress following Lexington and Concord.

After the Revolutionary War the Army was cut to 80 men, and it has been cut after every subsequent war in our history.

With the extension of our western frontier the Army was expanded to fight Indians, explore and survey the western lands and build roads and fortifications. In 1812 came another war with the British.

The Mexican War followed in 1846, in which the Army performed in better fashion than before. There followed an interim of frontier campaigning, leading up to the Civil War in 1861. This was our costliest war in lives.

The War with Spain came at the close of the century, and in 1903 came the organization law which is still the basis of our Army organization.

World War I increased our Army to several million and took a huge force overseas, where it turned the tide of victory for the Allies.

World War II took our Army all over the world and its strength totalled over 10 million.

The postwar period brought continued commitment around the world. In 1950 another emergency called American fighting men to some of the toughest action in our history, the Korean conflict.

The history of the United States Army goes hand in hand with our country's history.

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5. Nason, *Minute Men of '61*, 9.
6. Victor, *A History of the Southern Rebellion*, I, 161.
7. Doubleday, "From Moultrie to Sumter," *Battles and Leaders of the Civil War*. (Buel and Johnson, editors), I, 48-49. Hereafter, this work will be cited as *Battles and Leaders*. The garrison's commander, Major Robert Anderson, was promoted to brigadier general a month later. Phisterer, *Statistical Record of the Armies of the United States*, 262.
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13. *Ibid.*, I, 93-144.
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16. Nicolay and Hay, *Abraham Lincoln*, IV, 77-78.
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27. *New York Times*, July 15, 1862, 1.
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33. Shannon, I, 283.
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37. Shannon, I, 290-291.
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49. *Ibid.*, 8.
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# *The Army's Atomic Gun!\**

by SECRETARY OF THE ARMY FRANK PACE, JR.

**I**N its quest for greater fire power, the Army turned quite naturally to seek atomic weapons fashioned for use against an enemy on the battlefield. But recognizing the need for such weapons and building them were two different things.

The first atomic bomb was clearly a strategic weapon designed to shatter such targets as enemy industrial complexes. And in 1945, there was considerable doubt whether it could be adapted in a suitable form and size for tactical purposes. Fortunately, the Atomic Energy Commission, working in close concert with the Armed Forces, soon dispelled this doubt. Today we have a tactical atomic bomb that can be used against enemy forces in the field.

In addition, we have developed or are developing other atomic weapons to assist the soldier. We have the prototype of an atomic gun, and are training "atomic artillerymen" to use it. This newly developed atomic gun can give the ground commander tremendous fire power at his finger tips and directly under his control. Like conventional artillery, it would be especially effective in defending against attacking ground forces obliged to mass and expose themselves in an assault. Unlike an air-delivered atomic weapon, the atomic gun can function in all kinds of weather, night or day. It is essentially an artillery piece—but with immeasurably greater power than any artillery hitherto known. Carried on a platform suspended between two engine cabs at front and rear, this highly mobile atomic weapon can travel at a speed of about 35 miles per hour on highways. Weighing

about 75 tons, it can cross bridges which Army engineers are already trained to build for present heavy divisional equipment. It can travel cross-country, fit into a landing ship designed for amphibious operations. It can fire with accuracy comparable to conventional artillery, and tests indicate it is much more accurate at long ranges.

In short, the atomic gun can, with the sureness of the traditional field artillery piece, hit its target under any weather conditions and give ground troops the kind of devastating close support never before available in warfare.

To propel atomic projectiles still farther by weapons to hit ground targets—in short, to provide atomic artillery that can far outrange our atomic guns—we are developing guided missiles and rockets to receive atomic warheads. We have been training guided missile and rocket units for some time and we are increasing the scope of this training program.

These are the developments, these are the trends. They are most encouraging; but they are most emphatically no reason for complacency. Most of the atomic weapons for Army use are weapons of the future; but while your Army thinks in the future it must be prepared to fight in the present. We have no desire to delude ourselves as Hitler deluded the German people with his rash promises about German "secret weapons." These secret weapons eventually appeared in the form of V-1 and V-2 flying bombs; but too late to assist materially German armies fighting with less advanced weapons.

There is no indication today that warfare of the future would not present a continuing need for many of our current conventional weapons. Push-button warfare that would eliminate the man on

\*This article is an excerpt from a speech by Mr. Pace delivered on May 8th, the anniversary of VE Day, before the National Wool Manufacturers Convention in New York City.—Ed.



*"We have the prototype of an atomic gun*

*and are training atomic artillerymen to use it."*

the ground exists only in the realm of science fiction. And I emphasize the word "fiction."

That is the reason why your Army—along with its sister services—is today attempting to strike a sane balance between what is immediately attainable in military strength and what we hope to attain. That is why we have continued to improve the weapons and add to the fire power of our Army divisions—the same divisions which are fighting in Korea today. Compared to its World War II counterpart, the Infantry Division of today has half again more fire power. We have made similar increases in the fire power of our armored and airborne divisions.

Meanwhile, I can assure you, your Army has no intention of "preparing to fight the last war again." We are employing our best brains to exploit to the utmost the potential of atomic weapons. In this critical era of world history, we recognize only too clearly the need to keep our thinking and doctrine abreast—or even ahead—of technical developments in atomic as well as other fields. We remember that in World War I, it was the British who developed the tank, but the Germans who exploited it in the opening stages of World War II.

Although it is too early to foresee the ultimate effects which atomic weapons will have on ground warfare, certain influences are already apparent. It is clear, for instance, that the threat of atomic weapons in future ground warfare will necessitate much greater dispersion of both attacking and defending forces. Great concentrations of troops and matériel, such as occurred in the Normandy invasion, would assuredly invite atomic attack. In fact, tactics in an atomic war may include attempts to force an enemy to concentrate so that he will present a remunerative target for an atomic weapon.

Meanwhile, other things being equal, atomic weapons could favor a defender who had the opportunity to build strong and dispersed defensive positions, particularly below the ground's surface.

Compulsory dispersion of ground units to present unprofitable targets for atomic weapons would bring problems of control and communication. Dispersion of combat units and supply forces makes both more vulnerable to guerrilla attacks from enemy partisans. Troop organization to meet this type of warfare might take the form of small, but heavily armed and self-contained units. To cope with guerrilla attacks—such as we encountered in Korea—soldiers of the so-called rear echelon would have to be trained and equipped to defend themselves to an even greater extent than in the past.

The availability of tactical atomic weapons would place high premium on alert combat intelligence agencies. Many appropriate targets such as troops massing in the open for an attack, a river crossing, or an amphibious landing would be fleeting in nature. Aggressive patrolling, skillful and speedy interrogation of enemy prisoners, and the intelligent use of undercover agents would help identify and evaluate these targets in time to engage them with atomic weapons.

I have mentioned these concepts in general terms to give some indication of the thought your Army is giving to its role if a general war should ever come in the Atomic Age. Our doctrine is, of necessity, flexible and varies as new technical developments and weapons appear. But we are evolving this doctrine and publishing it in manuals, consistent with security consideration, to keep our soldiers abreast of atomic developments and to accustom them to including atomic weapons in their tactical thinking.



# The Top Command in Europe

United States forces in Europe have been developed from a general occupation mission into an integrated army that holds a significant role in the Western defense structure. While sister forces in the Far East are fighting a hot war, our troops in Europe are "fighting" an equally important cold war. At the present time the strength has been limited to six divisions. Five are on hand, supplemented by the armor units of the former Constabulary, which are considered to be roughly equivalent to an armored division. (ARMOR wants to see these units joined in a reactivated 4th Armored Division, which will provide Seventh Army with two balanced corps of one armored and two infantry divisions each. History supports the mobile requirement.) In the thought that professionals around the world would like to see the command picture rounded up, ARMOR sets out the chain as it stands at the moment. This review of our leadership in Europe is at once an indication of our capabilities in a critical area of the world today and our resolution to join our friends in the common purposes of freedom and peace.—THE EDITOR.

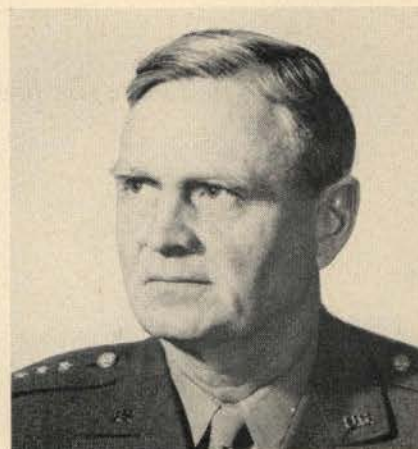
U.S. Army Photos

## SHAPE COMMANDER



Gen. Matthew B. Ridgway  
Supreme Commander, Allied Powers

## EUROPEAN COMMANDER



Gen. Thomas T. Handy  
Commander in Chief, European Cmd.

## THE DIVISION COMMANDERS



Maj. Gen. Thomas S. Timberman  
CG, 1st Infantry Division



Maj. Gen. George W. Read  
CG, 2d Armored Division

## SEPARATE COMMAND COMMANDERS



Maj. Gen. George P. Hays  
CG, U.S. Forces Austria



Maj. Gen. Edmund B. Sebree  
CG, TRUST, Trieste U.S. Troops

ARMOR—May-June, 1952



## ARMY COMMANDER



Lt. Gen. Manton S. Eddy  
Commanding General, Seventh Army

## THE CORPS COMMANDERS



Maj. Gen. John E. Dahlquist  
Commanding General, V Corps



Maj. Gen. Withers A. Burrell  
Commanding General, VII Corps

## THE DIVISION COMMANDERS



Maj. Gen. Harlan N. Hartness  
CG, 4th Infantry Division



Maj. Gen. Daniel B. Strickler  
CG, 28th Infantry Division



Maj. Gen. Kenneth Cramer  
CG, 43d Infantry Division

## A POTENTIAL ARMORED DIVISION



Col. Creighton W. Abrams  
CO, 2d Armored Cavalry Regiment  
ARMOR—May-June, 1952



Col. Howard M. Snyder, Jr.  
CO, 6th Armored Cavalry Regiment



Col. Chandler P. Robbins  
CO, 14th Armored Cavalry Regiment



FIRST place a large portion of branch articles in a prospectus, and stir briskly to insure mobility. Then put in some general military material and mix to the right consistency. Measure in a book review and a pictorial feature and season with a dash of letters to the editor, news notes and editorials. Pour between covers and place in a press . . .

The ingredients that go into a magazine are of great concern from the editorial viewpoint. How consciously the reader analyzes a magazine is another thing. Probably there is not a real awareness of content unless consciousness is directed to the subject from the editorial side. We thought a little spelling out of what ARMOR consists of, and why, would be interesting.

The broad object appears in the Constitution of the Armor Association, with the stating of the aim and purposes "to disseminate knowledge of the military art and sciences, with special attention to mobility in ground warfare; to promote the professional improvement of its members; and to preserve and foster the spirit, the tradition and the solidarity of Armor in the Army of the United States."

There are many ingredients to a magazine, and many reasons behind each part. Move with us through a copy of ARMOR and let's check the editorial view to see why it is as it is.

THIS is a branch magazine. We are concerned with a specialty—mobile warfare. We don't profess to go beyond that. That's why the meat of the content, the major part of the space, is devoted to branch articles. Article content is the payoff. To pretend to greater coverage than mobility, and in fact to attempt it, would provide you with a smattering of ignorance, as it were, rather than a professional and worthwhile coverage of the subject you're most interested in. So the bulk of the content is articles on mobile warfare.

Backing up the branch articles are several general military items in each issue, by-products of the whole, which have value along the lines of broad-

ening the military man. These serve a purpose of variety and interest, and contribute a lot to the whole product. But they are held down to proportion.

It might be appropriate to take the Book Section next, as a substantial area in the magazine. The feature book review each issue is not only that. It is done by a qualified authority in the subject that is under appraisal. This always has wide appeal. The review is, in fact, an essay in itself, another article of great military value.

AS for the ads here, they constitute the only form of advertising in the magazine. ARMOR carries no paid advertising. All ads cover selected professional items the knowledge of which can be considered of value to you—the professional. Space is proportioned to the importance of the items, and wide intelligence of worthwhile material is given. There is not repeated mention of unsalable things. Service to you is the keynote here. Sales follow that. If an item is considered professionally valuable, it gets a full play whether or not we make a penny on it.

So far as advertising goes, we're happy we don't take paid advertising. It wouldn't do you, the person we're serving, any good to have advertising knock out some of your payoff space. And we'd hate to have you wading through fifty pages of ads trying to locate the first article.

About here we should check off a regular feature of each issue—Sum & Substance. We did a lot of dreaming before we came up with that title, which very adequately tags what we had in mind when we conceived the feature. Here we are able to offer the best and latest word on a controlled subject, and we feel that this lends a lot to the magazine.

Now let's move along to the so-called seasoning. These are the editorial features that make for leavening, for softening and flexibility in the magazine.



LETTERS to the Editor fall in the lead spot in the issue, a conventional placement in the business of magazine making. Now many publications cram this full of self-praise. We lay off that as much as humanly possible, for we'd prefer not to try to influence you into imagining this is a good magazine. We'd rather let the facts and the product speak for themselves. More likely, if any comment on the magazine as such appears here, the negative approach will receive more play than the positive phrases.

This is because the Letters section should be a discussion medium, a place where differences of opinion in the professional field may be aired for the benefit of all. A lot of worthwhile thought can be set forth in a short letter. That's the purpose here.

Editorials provide the medium where the magazine, as a primary instrument, speaks out on behalf of the Association, in a sense, on the subjects of significance to our special activity. It's the place to swing the weight around, but within the bounds of propriety, common sense and fact.

THE pictorial feature is a popular approach to coverage of a valuable and interesting story on some phase of our special or general field. Many stories can be put across in this manner much more suitably than with a block of words. The reader finds this easy to take. It is in keeping with this that you find such liberal (albeit expensive) illustration in ARMOR.

Let's proceed now to News Notes.

During the course of an issue period, some eight weeks flow by. Those eight weeks are filled with happenings of all kinds. This is a magazine, not a newspaper. Thus, we bring you a few notes bearing on your specialty, not much more. It isn't our mission to fill up pages with odds and ends of intelligence about anything and everything relating to the military. If you want that, we refer you to the weeklies which specialize in that approach. *Army-*

*Navy-Air Force Journal, Army Times, Armed Force* and the *Army-Navy-Air Force Register* will satisfy you.

"What Would You Do?" is a training problem. We're proud of the series and the fact that ARMOR has pioneered in this graphic approach in training presentation. This is the last word in the subjects presented, coming right from The Armored School. The art work has been superior.

A single page each issue is devoted to quotes from the past years' pages of this magazine. It is interesting and provocative to note what was set forth and to see how it sounds today, sixty, forty, twenty-five, ten years later.

WE'VE run pretty well down the line to the feature that falls under the heading Reconnoitering. That's what you're reading. The purpose of the column, as we set it up originally, should be at work right now. We designed it to bring you closer to us and us closer to you. We wanted to cover some of the intimate details of operation on the home end of things. In the past we've told you the stories on the Association, the presidents thereof, the circulation, the book department, the winning of an editorial award, a movie premiere, and many other things. We hope it serves our purpose.

In coming issues we'll carry along with this background. For we want consciousness and awareness all along the line. It brings us closer together, so that you have more of a possessive feeling about the Association and the magazine. The resulting interest is to the benefit of our fraternity.

Perhaps this detailed look at the recipe for ARMOR makes it a little more palatable to you. We hope so. When you figure it out, you're really the diner, and we're the chef, even though we do sign ourselves . . .

The Editor



# 18,000 ENGINEERS

by **SECOND LIEUTENANT WILLIAM J. BREISKY**

**W**HEN the men of the 1st Armored Division were running through the ABCs of armored warfare last spring, Major General Bruce C. Clarke, their commanding general, was pondering a problem in Armored Arithmetic: Subtract your engineer support from a reinforced battalion and what is left?

On paper, the answer was simple. The remainder was a task force (-).

On the road, however, the answer would be spelled in clearer terms: a battalion stalled for hours at a blown bridge site . . . a battalion stymied at a deep crater on a mountain road . . . a battalion less two good riflemen, killed because they had been given insufficient training in minefield probing.

General Clarke knew that his 16th Armored Engineers were well equipped to support the division's combat commands. But his experience also told him that his engineers could be spread just so thin; that there would be times when tank and armored infantry battalion commanders would turn around and call for the engineer support that wasn't there.

The solution to the problem was under construction well before the problem really existed in the newly activated division. Lieutenant Colonel Ralph N. Hale was putting his 16th Engineers to work, setting up a school designed to make every man in the division engineer-conscious.

Principles of instruction were sound: Keep it short; keep it simple; don't assume.

Popularly called "the mine warfare school," the training program was hacked down to eight tightly knitted hours of practical instruction. It is conducted on a permanent county

fair-type course that enables each man who wears the 1st Armored Division patch to practice the five basic engineer skills.

During the period from 11 September to 5 October of last year, approximately 18,000 men were trained in the school. Since that time, the scope of the instruction has been enlarged, newly assigned troops have been run through and some units have been re-instructed.

Each of the four sites has a capacity of 250 men; the entire area can accommodate 1,000 men per day.

On Saturday of each week (when the school is in operation), the 16th provides instructors. Each battalion scheduled to attend the school during the following week sends 35 officers and NCOs to the Saturday class. On the following Monday, the tank, artillery or infantry battalion scheduled for the training provides its own instructors from the personnel trained on the previous Saturday.

The 16th provides over-all technical assistance at all times and issues individual lesson plans to the unit instructors. Thus a core of "experts,"

each proficient in a particular phase of engineer work, is formed in every unit. Instructors from these units repeat the class at their sub-course as often as 40 times a day.

The level of instruction assumes that the most promising student has never been called upon to push anything heavier than a No. 2 pencil. (i.e.: The instructor at the hammer site arms himself with a bevy of charts and diagrams to make certain that every student understands that . . . "This is a claw hammer. It is used in carpentry. It has claws for pulling nails . . .")

A seasoned carpenter would find this instruction pretty dull fare. But before his daydream can progress too far, he is whisked off to a nearby area where another instructor is demonstrating the proper method of setting up a cratering charge.

Practical work fills out as much as three-quarters of the 20-minute period: "Don't choke that hammer. Hold it like this. Use your wrist and put your whole arm behind each stroke . . . like this."

A waste of time? Certainly not. The students appreciate the fact that no prior knowledge is assumed. And in constructive work of this type, men with more experience like to demonstrate their adeptness.

At Site A, the hand tools site, 20 minutes each is given the five sub-courses—hammer and hatchet, axe, OVM tools, saws, pick and shovel.

If the men are slow to learn, corrections are made during the practical work period. The assistant instructor at the axe site carries a typical check list for quick reference:



An NCO instructor shows on a terrain board how the six-belt minefield is laid.

Lieutenant William J. Breisky is a member of Company C, 16th Armored Engineer Battalion, First Armored Division, Fort Hood, Texas.



"Are the students assuming CORRECT STANCE?

Are they 'PECKING' at the wood?

Are they CHOPPING into the GRAVEL?

Are they using LONG, HARD STROKES?

Do they check the AXE HEAD to see that it's TIGHT?

Do they keep their FEET OFF the log they're cutting?

Is anyone leaving his AXE LYING ON THE GROUND?

HOW ABOUT SAFETY?"

A great deal of stress is placed on practical tips that will save wear and tear on the man and his tools. For instance, the assistant instructor at the axe site takes time to see that each man practices some strokes with the left and some with the right hand leading to prevent tiring.

Classes at the hand tools site generally include a five-minute lecture, with the remaining 15 minutes devoted to practical work. At the completion of each period, tools are loaded on a rack provided and the men move to the next sub-site.

Site B—field fortifications and camouflage—has helped solve a chronic 1st Armored Division problem: Many of the men have never dug a permanent-type foxhole, due to the rocky quality of this rugged central Texas soil. So the engineers hauled an air compressor and a pneumatic clay digger to their training area and proceeded to set up the ideal in field fortifications.

Armored infantrymen had their work dug out for them at this site. The doughboys saw one- and two-man foxholes and a skirmisher trench, a horseshoe emplacement, a double apron fence and a concertina fence.

Men of the LMG squad carefully studied an ideal position for their weapon and those who worked with a 60mm mortar platoon nodded approval at an emplacement that would help protect their often-unhealthy position from enemy artillery fire.

The engineers showed the rest of the division not only how to construct and camouflage protective wire, but also how to breach and cross it as quickly as possible, making the smallest possible target.

Camouflage demonstrations show how a dummy 105mm howitzer may be built and how to use a net in



U.S. Army

Homemade mine probers force the men to probe at proper angle—not vertically.

camouflaging a dug-in tank or self-propelled artillery piece. "Make a realistic silhouette" and "Keep it simple" are the only rules offered for this Operation Deception.

First thought of an engineer training school in the 1st Armored Division came in 1944 when "Old Ironsides" began its push across Africa and northward through Italy. A mine warfare school was organized when the division ran into heavy German and Italian minefields for the first time.

The original idea at Fort Hood was to profit by lessons learned and make certain that the newly activated First had trained every man adequately in the essentials of mine warfare.

So the "mine warfare school" was hatched. But before it had matured, Lieutenant Colonel Hale had tacked on so many additional demonstration areas that the school had become "the engineer training school."

Extensive planning went into the preparation of Site C—mines—for this was the school's *raison d'être*. Description, employment, functioning, installing, arming and disarming of light and heavy antitank mines are topics of discussion at this site.

On a large terrain board, a replica of the mine warfare training area has been set up where an instructor may demonstrate the part each man will play during the practical work phase. When all questions have been answered, the men move out to help lay a six-belt field and in an adjacent area, to probe.

At the last large area, Site D, the men learn the dos and the perhaps more important don'ts of demolition work. Twenty-five minutes each are spent at the four sub-sites.

The students are re-introduced to

the subject of demolitions and are familiarized with the types of explosives at the first sub-site. No instruction is given without a sample explosive on hand.

The second sub-site covers special explosives such as bangalore torpedoes and blast-driven earth rods.

Following a demonstration of methods of destruction of equipment, the course ends with a bang when each man ties a ½-pound block of TNT into common series for electric detonation.

When the entire division had been tested, the men of the 16th went over the same sites for a second trip. Only this time, a chain saw was substituted at the hand saw site; an actual equipment destruction job was tackled at the demolitions site; and when the six-belt minefield was laid this time, it was supplemented with trip flares and booby-traps.

The flexibility of the permanent sites had allowed for advanced training in the same area. On the strength of this advanced class, tentative schedules were set up to send the entire division through a similar course.

Very little time elapsed before the effectiveness of the one-day school was being proven in the field. A how-to-do-it picture had been painted in the mind of each individual soldier. In eight hours of instruction, each man in the division had hammered, mined, blasted and camouflaged his way to a clearer understanding of the engineer role. What the men hadn't done for themselves had been clearly demonstrated to them.

The 1st Armored Division's 1,095 armored engineers now had 17,000 sympathetic and better-trained apprentices.



# NEWS NOTES

## Effect of an Appropriations Cut on Tank Program

*The following is an extract from a statement by General J. Lawton Collins made on May 5th before the Senate Subcommittee on Armed Services of the Committee on Appropriations, concerning a proposal to limit the Army's expenditures during the coming year.—Ed.*

**Tanks:** We have in production a medium tank which we think is more than a match for any other medium tank in the world. If this expenditure limitation is made we shall have to eliminate over 3,000 mediums, with the result that we could build only 300 tanks for our Army during the entire fiscal year. This means that we would not be able during Fiscal Year 1953 to support our overseas troops, including those on the front lines in Korea, with any spare modern tanks. We would also be left with almost an 80 per cent shortage in our requirements for our newly developed post-World War II tanks for the active Army in the United States. Furthermore, we could not give a single modern tank to the National Guard or the Organized Reserves for training, nor would there be a single modern tank in any of our depots.

During FY 1951 when the North Koreans used tanks sparingly, we lost over 400 of our World War II medium tanks from all causes—mines, battlefield wear-out, and enemy tank action—twice the number we would have available for combat replacement if we took every modern medium tank out of the hands of our troops in the United States. Of course during the Korean conflict more than 700 Soviet mediums have been destroyed and in direct tank action, we have knocked out the Soviet tanks in the ratio of 5 to 1. World War II statistics show that in violent combat, such as our men in Europe would be plunged into if they were attacked, the tank losses amounted to 14 per cent per month.

Therefore, if this limitation is imposed, we could not support our Army forces on the front lines.

## New Korean Campaigns Designated By Army

Two new Korean battle campaigns were officially designated by the Department of the Army recently.

They are:

1. The United Nations Summer-Fall Offensive, applicable within the territorial limits of Korea and adjacent waters between July 9, 1951, and November 27, 1951; and

2. The Second Korean Winter, applicable to the same area between November 28, 1951, and a date to be determined.

The Far East Command will designate Army units entitled to battle participation credits for service in these campaigns. Following this action, personnel assigned to those units during the time limits specified will be entitled to wear service stars on the Korean Service Ribbon.

## Eleventh Armored Division Reunion

The Eleventh Armored Division Association has announced plans to hold its Annual Convention in Washington on August 15, 16 and 17 at the Willard Hotel. Members of the Association and all former members of the Division have been urged to attend this reunion which will celebrate the tenth anniversary of the activation of the "Thunderbolt" Division. Michael J. L. Greene, Association president, announces that request for additional information should be addressed to: Eleventh Armored Division Association, 1719 K Street, NW, Washington, D. C.

## Maintenance Pennants

Maneuver maintenance "M" pennants, emblematic of a combat crew's incentive to keep its vehicles rolling with a minimum of "deadline" time, are once again flying from tanks and other track vehicles commanded by Major General Bruce C. Clarke. Six hundred and thirty-eight First Armored Division combat vehicles qualified for the awards.

The "M" pennant idea was first crystallized by General Clarke in 1950 as recognition for outstanding maintenance by tank crews in his 2d Constabulary Brigade. The awards were presented to his forces in Germany after the Exercise Rainbow maneuvers.

The big change in the Germany versus Texas "M" pennant program is that half-tracks, tank retrievers and self-

## Top Command Changes



Bachrach  
**Gen. Dwight D. Eisenhower**  
Retiring to enter political field.



U.S. Army  
**Gen. Matthew B. Ridgway**  
Supreme Allied Commander Europe.



U.S. Army  
**Gen. Mark W. Clark**  
New Far East U.S.-U.N. Commander



U.S. Army  
**Lt. Gen. John R. Hodge**  
New Chief of Army Field Forces.



propelled artillery pieces were allowed to join in the recent Exercise LONGHORN pennant competition.

In order to qualify for the green and gold pennant a vehicle had to clock at least 200 miles during the maneuvers. Another provision informed crews that their vehicles could not be deadlined more than 90 minutes while in a tactical role.

Three hundred and nine half-tracks, averaging 321 miles during the 17-day LONGHORN maneuvers, led the way in easily surpassing the 200-mile minimum. Two hundred and forty-eight tanks qualified, with an average of 268 miles apiece.

In all, over eighty per cent of eligible First Armored vehicles qualified for the pennants.

### Top Extension Course Student

Diligent application to his studies has raised WOJG Frank W. Etheridge, Command and Staff Department, The Armored School, to tops in short time completion of subcourses of the Extension Course Department, TAS.

Riding the crest of a 1,500-student enrollment, Mr. Etheridge first enrolled in Armor extension work in May 1950 after having completed the "10 series" issued by the Army General School, Fort Riley, Kans. He was at that time a sergeant first class stationed at Fort Bliss, Tex., with the 16th AAA Group. In less than two years Etheridge has completed the 20, 30 and 40 series and is now working on the 50 series.

According to the Training Literature and Reproduction Department director, Lt. Col. Edward H. Kyle, Etheridge has consistently maintained "high excellent" grades in all the subcourses.

### U. S. to Help Britain Expand Tank Output

The United States will ship about \$750,000 worth of special machine tools to Britain this year to help expand production of the famed 50-ton Centurion tank.

The Mutual Security Agency in disclosing this said the British tanks, which have been tested successfully in Korea, will come off assembly lines "in increasing quantities during the next 10 months."

### Captured Russian Tanks Aid Army Scrap Drive

Russian tanks captured from the Communists in Korea are going into blast furnaces to provide steel for American weapons, the Department of the Army has announced.

The tanks and many other foreign weapons, as well as large numbers of obsolete or worn-out United States military items, are being cut up with torches at Aberdeen, Maryland, Proving Ground.

The Russian tanks were originally brought to this country for study and examination by Army Ordnance Corps officers.

In the current drive for critical scrap,

the obsolete and foreign guns and tanks at Aberdeen are sliced into unrecognizable chunks of steel and shipped to steel company mills.

To date, twenty tanks have been cut up.

Before the project is completed over 5,000 tons will be sent to the mills.

### Tank Plant Chief

D. E. Ahrens, general manager of the Cadillac Motor Car Division and vice president of General Motors, has announced appointment of Harold R. Boyer as plant manager of Cadillac's Tank Plant at Cleveland, Ohio. Mr. Boyer succeeds Edward N. Cole, who has been appointed chief engineer of the Chevrolet Motor Division of General Motors.

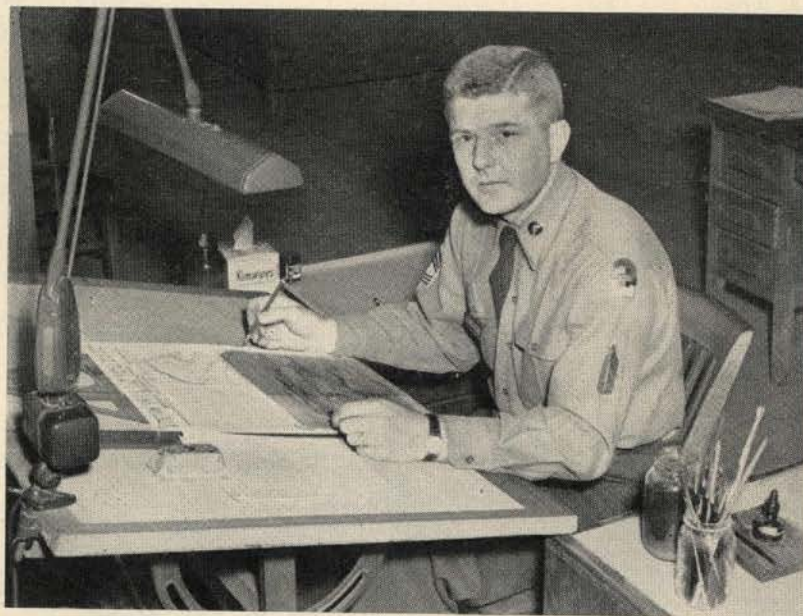
In 1940, Mr. Boyer joined the War Production Board at Washington as Chief of the Aircraft Manufacturing Branch. He joined the General Motors Chevrolet Division in January 1943 as assistant to the manufacturing manager, and in May 1945 was named manager of the Production and Stand-

ards Department. On 1 Sept. 1946, Mr. Boyer became director of the General Motors Production Engineering Section. Recently, he has been on leave of absence, serving as Chief of Aircraft Production of the Defense Production Administration.

### First Tank Engines Leave New Plant

The first shipment of tank engines to be produced at Chrysler's newly acquired Midland Ordnance Plant was delivered to the armed forces recently, 11 months after operations at the New Orleans facility began. This first shipment was consigned to the Chrysler Delaware Tank Plant, Newark, Del., where the T43 is in production.

B. S. Bright, General Manager of the New Orleans Engine Division, said: "There are still quite a large number of critical machines that we do not have yet. In this early phase of our operation, we are building our first engines with the aid of tool room machines and some temporary equipment that has been set up to handle the work."



The man responsible for the layout and illustrations appearing in ARMOR's regular feature, "HOW WOULD YOU DO IT," is Master Sergeant William M. Conn, a 34-year-old Regular.

Sergeant Conn, who heads a 12-man staff of draftsmen and illustrators in The Armored School's Art and Drafting Section, recently received a letter from Lt. Gen. Willis D. Crittenger, President of the Armor Association, commending him for his outstanding work in connection with this feature.

Sergeant Conn first entered the service at Fort Knox in 1936. During World War II he served in the European Theater as a First Lieutenant, Ordnance. He is a self-taught artist whose enthusiasm for his work and outstanding ability have earned him the respect and admiration of all persons with whom he is associated. Many of his drawings appear in the 17-series field manuals, in Armored School Special Texts, and in various other publications originating at The Armored School.



# HOW WOULD YOU DO IT?

## DISMOUNTED METHODS OF ATTACK

AN ARMORED SCHOOL PRESENTATION

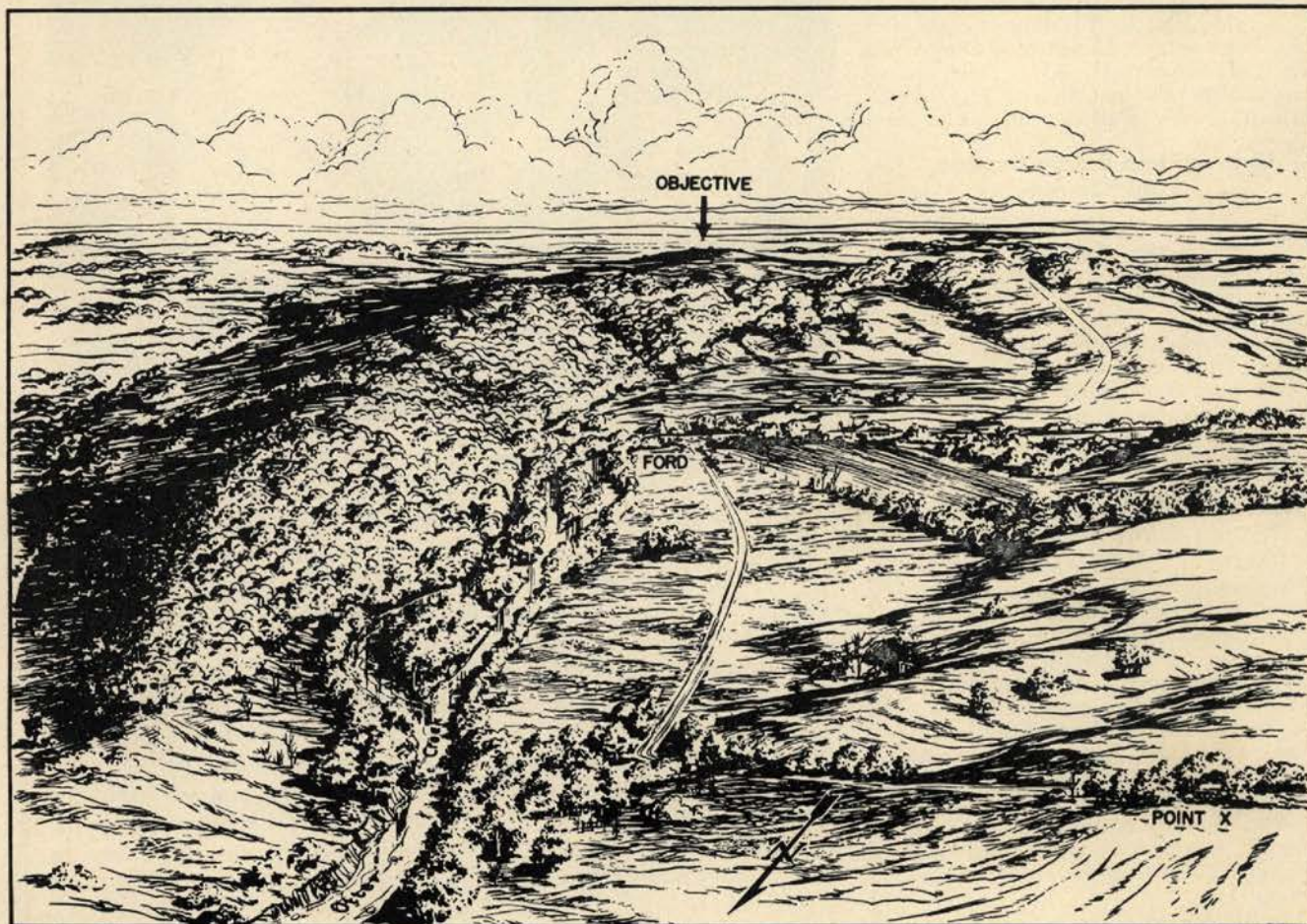
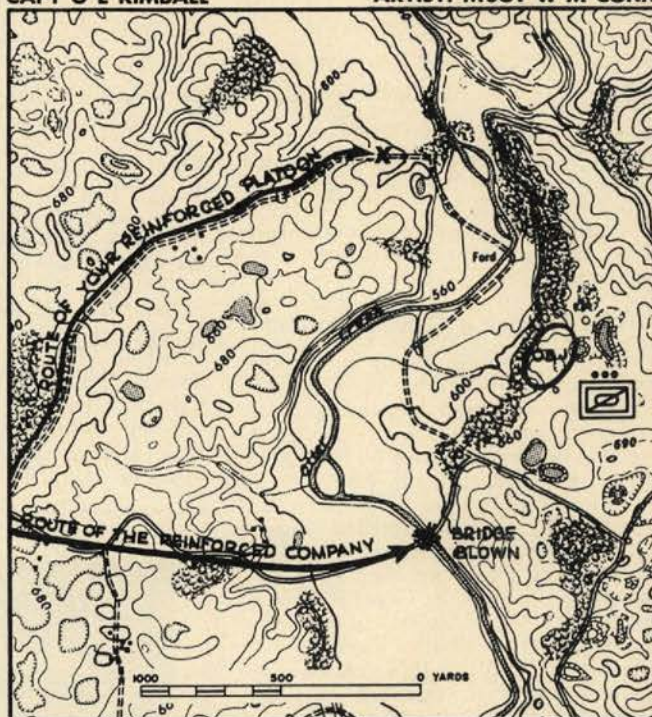
AUTHOR: CAPT G E KIMBALL

ARTIST: MSGT W M CONN

**GENERAL SITUATION A.** A reinforced tank company is moving generally east as flank guard for a larger force. As the leading elements approach the bridge over OTTER CREEK, the bridge is blown by Aggressor delaying forces. Your tank platoon, reinforced with an infantry platoon, is ordered to move north to the only ford, cross OTTER CREEK, and secure the high ground overlooking the ford. Up to this time you have been advancing against light resistance. As your reinforced platoon moves to the north, your company commander informs you by radio that Army aircraft has reported an Aggressor force estimated to be a reconnaissance platoon with two tanks now defends the ford. You are now at point X. From the map and sketch below, which of the five following dismounted methods of attack would you employ?

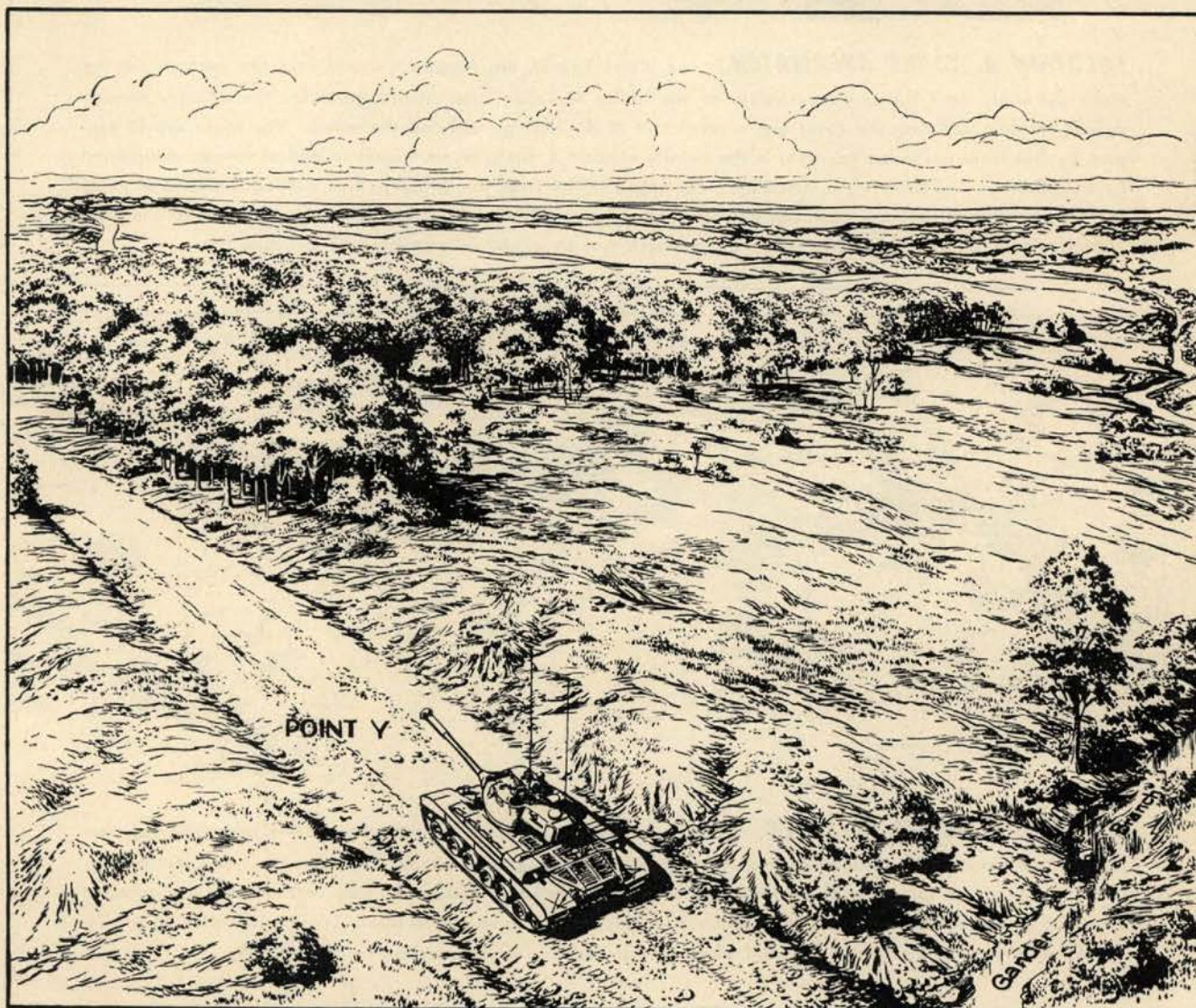
- ✓ 1. Tanks and infantry approach the objective from different directions
- ✓ 2. Tanks follow infantry, pass through to lead as the two closely approach the objective
- 3. Infantry ride tanks
- 4. Infantry and tanks move at the same rate together, or one slightly ahead of the other
- ✓ 5. Tanks overwatch infantry

How would you do it?

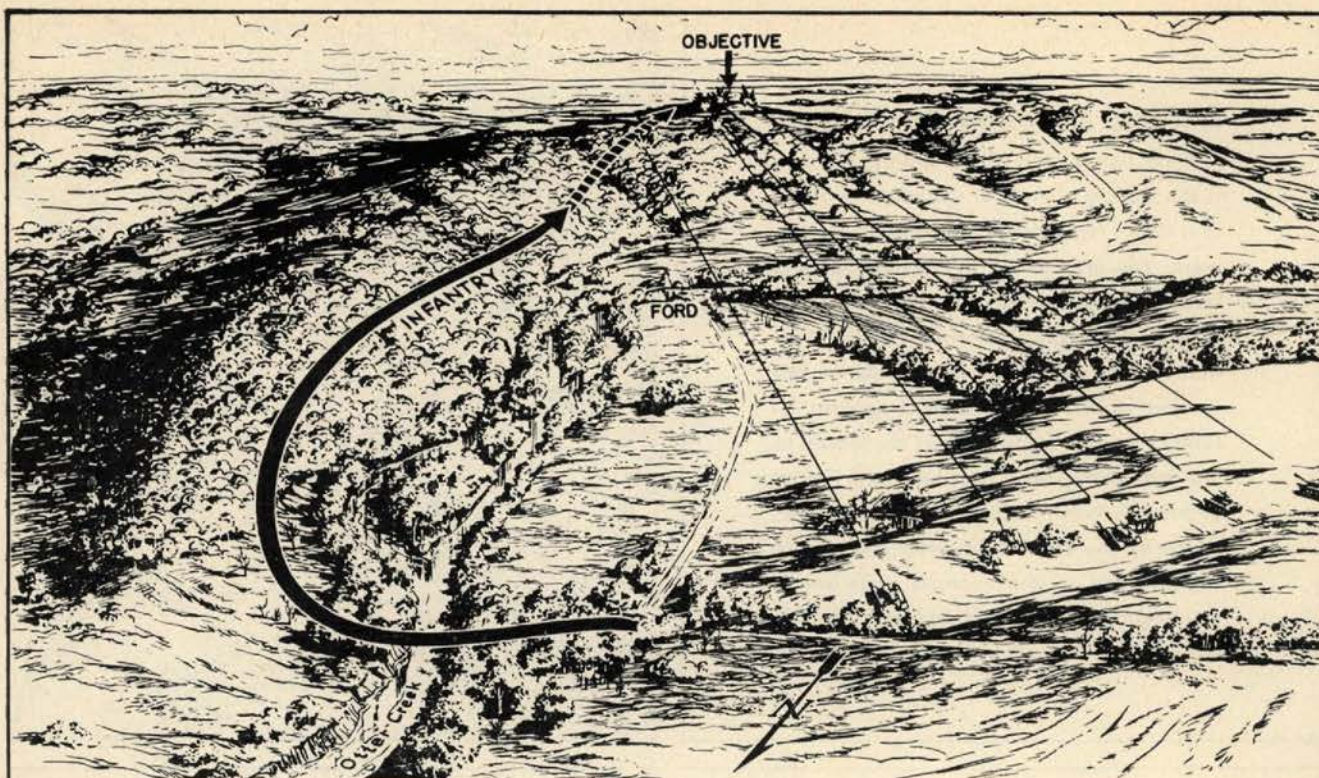




**GENERAL SITUATION B.** Your tank platoon, reinforced with an infantry platoon, is the leading platoon of the advance guard of a larger force exploiting generally southwest. You are moving in column. As your lead tank crosses GANDER BRANCH, your company commander informs you by radio that Army aircraft has reported the woods to your right front contains Aggressor infantry. He orders you to clear the woods to the right of the road. Your lead tank is now at point Y. From the map and sketch below, which of the five dismounted methods of attack listed on the opposite page would you employ? How would you do it?







**SOLUTION A. TANKS OVERWATCH.** The direct fire of the Aggressor tanks and the obstacle of the creek definitely limit the maneuverability of the tanks; therefore, you should maneuver the infantry platoon around the left, utilizing the cover and concealment of the high ground and the woods. The tanks should support by fire from defiladed positions in the vicinity of point X, firing on the objective and at targets designated by the infantry. The tank fire is lifted by prearranged signal from the infantry. This method is employed when natural or artificial antitank obstacles prevent tank movement to the objective. When the enemy holds the dominating terrain, do not send tanks into a defile which may be mined or is covered by antitank fire.



**SOLUTION B. MOVE TOGETHER.** You should deploy the tanks and infantry on line and move together through the woods. The infantry may move slightly in advance of the tanks, between the tanks, or immediately in rear of the tanks. As the attack progresses, the relative positions of tanks and infantry are adjusted according to the enemy resistance and the terrain. This method is employed when visibility is limited, in woods, in built-up areas, at night or in fog, and when adverse terrain forces the tanks to move slowly.



## 60 Years Ago

It has often struck me as a remarkable fact that the number of expert pistol shots that can be found either in the service or out of it is very small, or at least very small compared with the number of men who carry this weapon, and who are generally supposed to know how to use it. It is the only arm at present which an officer carries in the field, and the only one which he is likely to be called on to use. Yet I think that in our entire army there are not today more than ten or twelve officers who can justly claim to be experts with the pistol in any kind of shooting. The reason for this is simply that up to the present day their whole attention has been devoted to the carbine or rifle, and the pistol has been almost entirely neglected. What little practice we have had with it, has been done in a perfunctory kind of way.

Since the introduction of pistol matches at department competitions, however, quite a boom has been given to pistol shooting, and we may hope soon to have many fine pistol shots in the service. Practice is all that is required, but quite as much practice is needed to make a good pistol shot as is needed to make a good rifle shot.

*Snap Shooting With the Rifle and Pistol*

LT. JOHN PITCHER

## 25 Years Ago

The problem of co-operation between friendly aircraft and ground troops has never been solved to the satisfaction of both. While communication from plane to ground is made simple, rapid, and certain by means of dropped messages, that from ground to plane, by the methods now prescribed, is slower, more involved, and always subject to error.

Especially in co-operation with mounted troops, is some system of ground to plane communication needed which shall be rapid and complete.

With these considerations in view, Major John B. Thompson, 26th Cavalry (PS), with the enthusiastic co-operation of the Air Squadron at Clark Field, initiated at Camp Stotsenburg, P.I., a series of experiments. The experiments covered about three months in the summer of 1926, during which time, the use of flash signals by colored and white lights, alternately exposing and concealing panels, and the pick up method, were all tried out.

Of these, the last method was by far the most satisfactory. It required very little special equipment. It was rapid, in that it involved no tedious encoding, decoding, and alphabetic signal transmission. It was unmistakable, since the observer received the actual material message or map as prepared by the commander of troops on the ground.

*Communication—Ground to Plane*

LT. JOHN HUGHES STODTER

## 40 Years Ago

In the Revolutionary War there were all told four regiments of light dragoons, which passed out of existence at the end of that war. The first cavalry of the present government was raised in 1792 and consisted of one squadron with approximately the same number of officers and organization as an infantry battalion of that time and of our squadron to-day.

The first infantry regiment was authorized in 1790 and, except for having no colonel, was given practically the same legislative organization as our infantry regiments of to-day. If we follow the legislative organizations authorized for cavalry and infantry we will notice that the organizations kept practically the same down to the time of the Civil War. Some new regular regiments were then authorized which had peculiar organizations, but these peculiarities were only short-lived. The masses of troops in the Civil War usually had the organization for infantry of ten companies per regiment.

In 1862, all regular cavalry regiments were made twelve troops strong and were given three majors. The volunteer cavalry was required in 1862 to conform to this organization. The infantry continued the ten-company regimental organization down to 1898, when legislation adopted the modern four-company three-battalion regiment. The four-troop three-squadron regiment was legislatively adopted in 1899.

*Cavalry Organization*

CAPT. H. R. HICKOK

## 10 Years Ago

The War Department has announced the organization of a new Army combat force—the *Tank Destroyer Command*—with Headquarters at Camp Hood, near Killeen, Texas. This command is part of the Army Ground Forces under Lieutenant General Lesley J. McNair. Camp Hood will be commanded by Brigadier General Andrew D. Bruce, who will coordinate the instruction of tank destroyer units, test weapons and tactical doctrine, and develop technique.

The Tank Destroyer Command received its initial impulse from old Antitank Battalions and an experimental Tank Destroyer Battalion, last August. The second step in its development came in December when a Tactical and Firing Center was set up temporarily at Fort George G. Meade, Maryland.

A number of Tank Destroyer Battalions are now completely organized . . . and they are ready to: "Find 'em and Finish 'em!"

*Tank Destroyer Command*

NEWS NOTES



# TANK-INFANTRY TEAMWORK

*The writer of the following is commander of the 89th Tank Battalion in combat in Korea.*

In recent months, the defensive nature of the fighting in Korea has cast tank action in two roles; first, as direct support weapons emplaced on the MLR and secondly, as part of a tank-infantry patrol. Patrols are of most interest to the tanker since this form of action allows the use of one of his most valued characteristics: mobility.

The patrols vary in size, averaging one or two platoons of tanks with a corresponding amount of infantry. The distance of penetration into enemy lines varies with the terrain: usually from 1,000 meters to 5,000 meters in front of the friendly OPLR.

Patrol activity generally entails an advance to contact; an attack; and a withdrawal to friendly lines. It is imperative that coordination thoroughly cover all three phases. This is done by personal contact between the tank and infantry commanders, sometime prior to the patrol, and by use of the ANVRC 3 radio during the actual action.

The mountainous terrain often offers OP's overlooking the entire action and in these instances it is SOP for the infantry and tank company commanders to establish themselves at this point—the infantry commander with an SCR 300 and the tank commander with an SCR 509.

An additional coordination measure is the use of the battalion liaison plane to fly "top cover" for the patrol as long as any element remains beyond friendly lines. By mounting an SCR 509, the aircraft can maintain constant communication with the tank leader through his SCR 508. This air OP proves invaluable on numerous occasions, although sometimes a little hazardous for the pilot and the observer since the plane must be flown at altitudes of less than 1,000 feet. Considerable ground fire may be encountered but the accuracy of the observations is excellent.

All of the standard forms of advance are used but the most successful is for the infantry and tanks to approach the patrol objective from different directions. The infantry takes the most covered route and the tanks

use the route most easily and rapidly traversable by armor. Thus the infantry is not harassed by artillery and mortar fire drawn by the tanks, and both elements generally arrive on the objective at the same time.

When the ground OP is able to observe the entire action, "overcoordination" sometimes occurs and far too many people persist in trying to "get in the act." The net result is that the patrol leader, on occasion, spends more time on the radio answering questions than he does in leading his patrol. Although partially alleviated by experience, this situation continues



Lt. Col. Brooks O. Norman

to be a minor aggravation.

The withdrawal to friendly lines is made in the same manner as the approach, with the infantry invariably being pulled back before the tanks; not, however, to the extent that they could not rejoin the tanks rapidly if the need arose. On the longer patrols infantry are mounted on the lead tanks for the return trip. These tanks are kept well ahead of those bringing up the rear since the enemy habitually places mortar, artillery and recoilless rifle fire on the rear tank elements.

If tanks are damaged by mines, battlefield recovery operations are initiated at the start of the withdrawal. During this operation the infantry must remain with the tanks. By taking up hasty defensive positions well to the flanks, ground security is provided for the recovery operations, supplemented by the tanks not actually engaged in the recovery.

Generally speaking, the doctrine

and principles taught in service schools pertaining to tank-infantry employment are found to be entirely sound and practical when used in Korea. The key to a successful tank-infantry patrol action lies in thorough coordination and planning beforehand and in the imaginative and aggressive execution by the commanders concerned. Constant training in this basic principle will clearly illustrate to the average tanker and infantryman that each has certain admirable qualities that the other has not, which, when combined, produce a superlative ground combat team.

Lt. Col. Brooks O. Norman

♦ ♦ ♦

*The writer of the following is commander of the 64th Tank Battalion in combat in Korea.*

"Keep in touch, tanker." This expression, coined by a former CO, 65th Infantry Regiment, clearly depicts and expresses the effective, functioning teamwork of the 3d Infantry Division combat arms team. This expression illustrates the sincere feeling of welcome and invitation; of common interests in destroying and defeating the Communist forces; of mutual assistance and appreciation of tactical problems and operations—which means teamwork in combat, all parties working toward the same goal. The result is that the blue-scarfed rifleman, the yellow-scarfed tanker, and the red-scarfed artilleryman and engineer work with and for each other aggressively.

Briefly, here is how this 3d Infantry Division "Keep in touch," this teamwork, has functioned during the Korean Winter Line Campaign, with emphasis on the divisional tank battalion aspect during this type of sustained defense.

First, consider the antitank defense and fire support role of tanks during this Winter Line Campaign. Although each regiment of this division is blessed with an organic tank company, the terrain and situation offered ample opportunity to employ additional tanks from the divisional tank battalion along the OPLR and MLR, thereby producing greater quantities of direct tank fire from more and varied positions. From a selfish tanker's viewpoint, an aggressive program of this nature, whereby tank platoons



are rotated to and from front-line positions, enables the divisional tank battalion elements to maintain maximum efficiency of training and also bolsters morale during a prolonged sustained defense. However, from the front-line infantry point of view, these additional tank platoons increase the available automatic weapons and tank gun fire power along the MLR, greatly assist in bunker destruction, lend the infantry additional security against enemy armor and avenues of approach, and also assist day and night patrol actions with the far-reaching, direct fire from the main armament and the .50 caliber. However, at the same time, to the infantry, additional tank units along the OPLR and MLR mean additional heavy traffic moving over poor Korean resupply routes; additional local security responsibilities during hours of darkness; and additional incoming artillery, mortar, and SP fire on front-line positions. Likewise to the engineer, additional tanks mean additional work on repairing roads and drainage ditches, dozing trails and ramps on frozen hillsides, and gravelling icy hill passes, even though already overtaxed in road and bunker construction and repair programs. Nevertheless, the spirit of teamwork, "Keep in touch," prevails: the infantry elements are happy to have additional tank elements, the engineers willingly carry on, and the tankers happily climb to the OPLR or MLR hilltops to do their part in destroying the enemy.

Secondly, consider the role of conducting or supporting raids in force against enemy positions. During the Korean Winter Line Campaign, the subject of enemy intelligence, or lack thereof, has been extremely important. Consequently, company-size raids have become fashionable. From the time of inception of the raid plan, teamwork is the paramount item—ensuring that each man in the combat arms team will thoroughly know his job in the operation. From the division commander all the way down to Pvt. Zilch, the plan is examined in detail to ascertain how the tanks, artillery and engineers can assist the infantry elements, or vice versa. Then terrain similar to the raid zone of operations is selected. All combat arms participants, and forward air controller parties where applicable, rehearse and re-rehearse until coordination and

timing are completely satisfactory. The emphasis is on each man knowing and actually doing his part in the rehearsal, exactly as he will be expected to do it in the actual raid. Needless to say, such rehearsals inculcate and enhance teamwork—and especially when the division commander himself attends each one, to ensure that the rehearsal is a thoroughly coordinated display of teamwork prior to approving the raid!

An example of a company-size infantry raid, Operation Destroyer, conducted by the 2d Bn, 65th Infantry Regiment, will serve to illustrate the teamwork involved. The mission was to capture prisoners of war, to inflict



Lt. Col. M. L. Carey

maximum damage on the enemy, to destroy defensive installations, then to withdraw to original defensive positions. In an effort to render maximum support under the restricted terrain conditions, which precluded movement with the infantry, the tanks of Co C, 64th Tank Battalion, fishtailed and zigzagged up hitherto unclimbable OPLR crow's-nests and also up formerly occupied MLR hilltops late on the afternoon preceding the raid, assumed operational control of one platoon of the 65th Tank Company, zeroed in on prominent landmarks, prepared detailed range cards, and generally stockpiled ammunition to support the infantry raid at 0430 hours the next morning.

Under cover of supporting tank, infantry, and artillery fire, the raid was successfully conducted, with minimum friendly casualties because of the teamwork involved. When the infantry assault wire was knocked out

by enemy fire, the infantry battalion commander talked to the assault infantry elements over the tank radio. When infantry casualties exceeded available infantry medical evacuation vehicle, the tank company litter peep assisted. When infantry elements required additional grenades and small-arms ammunition, the tanks provided theirs. When the infantry elements withdrew, the tanks covered them closely, all the way back to their defensive positions. When the artillery could not pinpoint enemy bunkers or trenches, the tanks could and did. In return, the infantry provided the tanks with local security and hot messing facilities from their consolidated mess. Upon receiving word that the CCF planned to counterattack that night, the tanks remained in place and increased their fires, prepared to assist in defeating the expected CCF effort. In short, teamwork prevailed prior to the raid, during the raid and after the raid. The result: SUCCESS in combat.

Thirdly, consider the counterattack role of the divisional tank battalion in prolonged defense. Although Korean terrain is definitely not Gen. Patton's or Gen. Harmon's idea of tank or "potato" country, the counterattack possibilities must be exploited to the maximum. Consequently tank-route and terrain reconnaissance as well as tankable-terrain reconnaissances are particularly important to determine enemy information, feasible routes, attack positions, AT mine fields and gaps, timing, objectives, routes of withdrawal, blocking positions, resupply and evacuation routes, first-aid stations, and other pertinent details. In every respect the infantry, artillery, and engineer elements have been cooperative and helpful. For example, one combat team made a detailed program of guiding, orienting, and advising all tank unit commanders and most tank commanders of this battalion to its OPLR positions, thereby ensuring detailed ground reconnaissance and timely information for the counterattacking tank force. Likewise, the division artillery commander has continuously pursued the policy of providing both liaison officers and forward observers, although artillery officer personnel are in short supply, for all tank counterattack rehearsals and reconnaissance trips—to ensure complete teamwork for the day



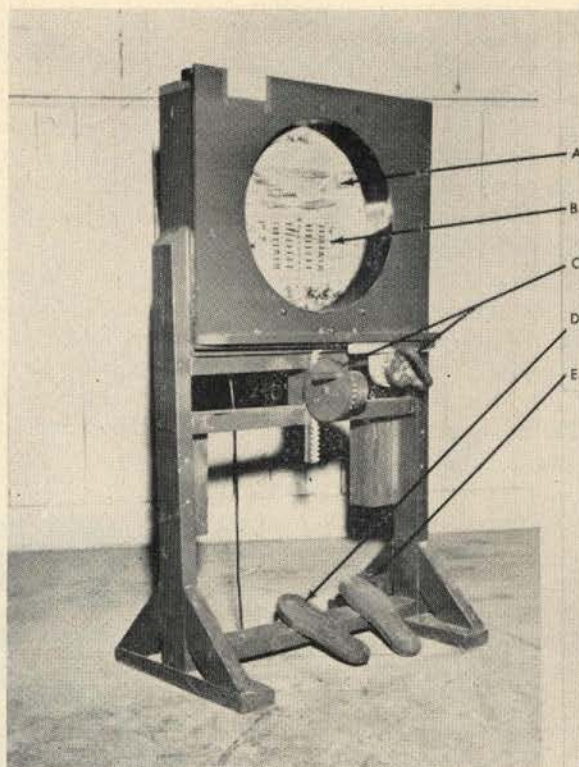
## CONDUCT OF FIRE TRAINER

The Conduct of Fire Trainer was developed and constructed by The Armored School to meet the requirements for a realistic device to train gunners in the "Burst-on-Target" method of fire adjustment. It has proven a successful means of teaching the tanker the proper "sight picture" and correct habits of following fire commands. And it provides a means of transition from classroom instruction to the actual firing in the tank.

The procedure used is for the gunner to take his position seated in front of the trainer with his hands on the traversing and elevating handwheels and feet on the foot pedals. The tank commander sits or stands behind the gunner while the loader takes his position to the left of, and facing the gunner. The instructor points out a target on the terrain sketch and tells the tank commander, "This is a (type of target). Take it under fire." At the same time he places the light in rear of a known range mark. Following is an example of this type problem:

Instructor:	This is a tank. Take it under fire.
Tank Comdr.:	Gunner-Shot-Direct Front-Tank-800-Fire.
Loader:	Up! (When he hears ammunition element)
Gunner:	Upon observing the target announces "Identified." Takes sight picture by manipulating the handwheels, announces, "On the Way," waits one second and fires by pressing the foot firing switch.

When the foot firing switch is pressed, the light in rear of the panoramic sketch will indicate where the tracer passes or falls short of the target. (The loader again announces "Up!" indicating that a second round has been loaded.) The gunner notes that point on the sight reticle where the tracer passes or falls short of the target and moves that point on to the target when he re-lays. He again announces,



A. Painted terrain sketch. B. Sight reticle. C. Traversing and elevating hand wheels. D. Firing switch. E. Flashlight battery box.

A small light in back of the trainer moves with the sight reticle. When the sight picture is taken by the gunner and the firing switch activated, the light indicates the burst or tracer. Adjustment may be made by the gunner to move that burst or tracer to the target and "FIRE" again. The terrain picture may be rotated independently of the sight reticle to bring new targets into view.

"On the Way," waits one second and fires. This will ensure a target hit if the gunner has applied the technique correctly. The tank commander will order "Cease Fire" when he feels that sufficient rounds have been fired to ensure target destruction. Detailed plans of this trainer have been forwarded to OCAFF with recommendations that it be accepted as a standard training aid.

that the counterattack is suddenly ordered. Again, without the willing cooperation of the Engineer Battalion, the movement of tanks in this particular sector would of necessity be very seriously hampered by road and AT mine conditions. In return, personnel of this battalion have learned that they must respect and avoid cutting infantry and artillery telephone lines when moving cross-country; must not follow in trace when travelling on thawing roads; must keep from de-

stroying drainage ditches, road shoulders, tactical or protective wire, and defensive positions.

The same teamwork holds true with respect to other roles or operations. Command and staff visits, division unit commanders' meetings, frequent rehearsals of planned operations, and mutual appreciation of and assistance with each other's problems make the "Rock of the Marne" combat elements a true team in the same sense as a championship football

team. However, unlike Topsy, this teamwork didn't just "grow"—it took work, and training, hard and continuous work and training. As was proven in training exercises, once the infantry has complete confidence in their tanks, and the tanks have confidence in their infantry, the result is the finest and most feared combat striking or defensive force known to man—an infantry-tank team. The answer, then, to teamwork is to "Keep in touch."

LT. COL. M. L. CAREY



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## "IN THE NAME OF THE GREAT JEHOVHA AND THE CONTINENTAL CONGRESS"

**RAG, TAG AND BOBTAIL.** The Story of the Continental Army, 1775-1783. By Lynn Montross. Harper & Brothers, New York. \$5.00.

Reviewed by  
F. VAN WYCK MASON

For the military or the general reader desiring an introduction to the history of our War for Independence, *Rag, Tag and Bobtail* is indeed a treasure-trove. The author of this volume has achieved a very skillful blend of analysis, research and appreciation as well as readability rare in works of this nature. All in all this is an excellent description of the various battles fought during our Revolution.

Mr. Montross' analysis of the causes contributing to the success or failure of this long war's various campaigns is as concise as it is lucid. Happily he incorporates just enough detail and the right amount of anecdote and statistics to make his history a vivid, as well as an informative piece of work. The author possesses more-over a firm sense of the dramatic—an element all too often lacking in the writings of the scholarly historian. In my estimation Mr. Montross' method of presentation of his great and varied mass of material is little short of inspired.

On the whole his word pictures descriptive of various important generals in all the armies—as well as of the politicians and statesmen behind them—are cleanly and vigorously etched. One can almost hear Washington's famous tirade at Monmouth, while Moultrie's account of conditions prevailing in Fort Sullivan during the First Siege of Charleston describes both the scene and the man himself.



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The Author

The Reviewer



George V. Brothers



Bachrach

Lynn Montross is a graduate of the University of Nebraska. He served as a private in the AEF during World War I. Newspaperman and novelist, he turned to a study of history, writing books which were to establish his reputation in this field—*War Through the Ages* (1944) and *The Reluctant Rebels* (1950). He is now historian with the Historical Division of the U. S. Marine Corps.

F. Van Wyck Mason, well-known historical novelist, is a graduate of Harvard and a colonel in the Reserve. He served as a lieutenant with the AEF in World War I and as a member of the General Staff of SHAEF in World War II. Between the wars he served with the National Guard. He is author of many books, including *Valley Forge: December, 1777* (1950) and *Proud New Flags* (1951).



# The Persian Corridor and Aid to Russia

by T. H. Vail Motter

This is the official history of United States Army activity in shipment of lend-lease aid through the Persian Corridor to Russia during the war years 1941-1945. This book is the 12th volume to be published in the 80-odd volume comprehensive history, *U. S. ARMY IN WORLD WAR II*, being prepared by the Office of the Chief of Military History. The author, Dr. T. H. Vail Motter, spent more than two years with the U.S. Army in the Middle East during the war. He holds a Ph.D. from Yale. The book tells the story of the flow of lend-lease supplies through the Persian Corridor to the Soviet Union. All relevant Allied and enemy documents were exploited to tell the story of the problems faced by the Allies in handling over 4 million tons of Soviet Aid Cargo, without benefit of well-coordinated policies to govern diplomatic and military relations.

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Most useful to the reader are the numerous yet simple and revealing maps with which the author has interspaced this work. By long experience I know how far such maps go to advance a reader's full understanding of the situation and the importance of the part played by terrain in the conduct of a given battle or campaign.

It is with a fine sense of impartiality that Mr. Montross analyzes the worth and *esprit* of the components of the various armies he describes. He gives credit where credit is due—and where it is too often withheld; for example, he awards generous laurels to those historically neglected Continental Regiments which were so staunchly

raised and supported by the little States of Delaware and Maryland, also to Dan Morgan's undisciplined but superb riflemen. No less does he prompt his reader to appreciate the long slighted constancy and great fighting qualities of those Americans who elected to fight for their King. Although patronized and neglected by His Britannic Majesty's generals—and heartily hated by their compatriots—these unfortunates—the Tories or Loyalists—he proves to have fought quite as well and as passionately as their brothers under General Washington's command.

It is perhaps in his exposition of the grand strategy of this eight years'



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struggle that Mr. Montross excels. Painstakingly, he has through research—which must indeed have been exhaustive when one considers the monumental bibliography listed in the back of his book—studiously endeavored to identify the often obscure causes contributing to the success or failure of the campaigns.

It is noteworthy that the author describes and labels what he considers to be “true victories” although these actions often are labelled as “technical defeats.” He cites, for instance, the so-called American “defeat” at Bunker Hill and at Guilford Court House. True, in these and other engagements, the field remained in the enemy’s pos-

session but the battle marked the commencement of a decline in the British commander’s fortunes. Similarly Mr. Montross asserts that claims of American “victories” of Oriskany and Newport were only hollow triumphs from which the enemy emerged practically unscathed.

Of particular use to future historians is the author’s appendix in which, among other things, he lists all the General Officers who served in the Continental Army, together with their dates of service and their fate.

All in all, Mr. Montross offers an accurate and enjoyable contribution to our understanding of how our first War for Independence was fought.

# The Transportation Corps: Responsibilities Organization and Operations

by Chester Wardlow

This first volume of the Army Department’s history of the Transportation Corps not only summarizes that history in general but also offers a wealth of detail as to how the Corps worked. The transportation problems of World War II were different from those of any earlier war. General Orlando War, Chief of Military History, states in his foreword: “As new and improved means of transport are introduced, the questions of military transportation become more difficult. The horse and the mule had their shortcomings, but their use involved few of the complications that bedevil the military in this machine age.”

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In this brief background lies the reason for our Book Department in the Association and our Book Section in ARMOR.

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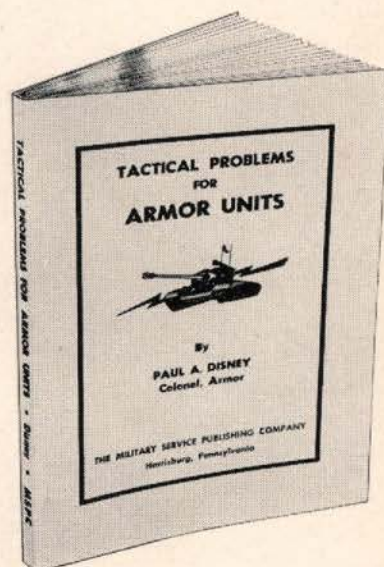
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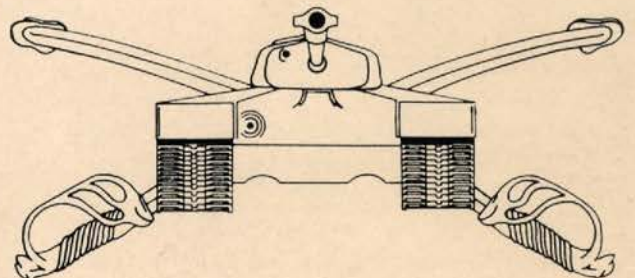


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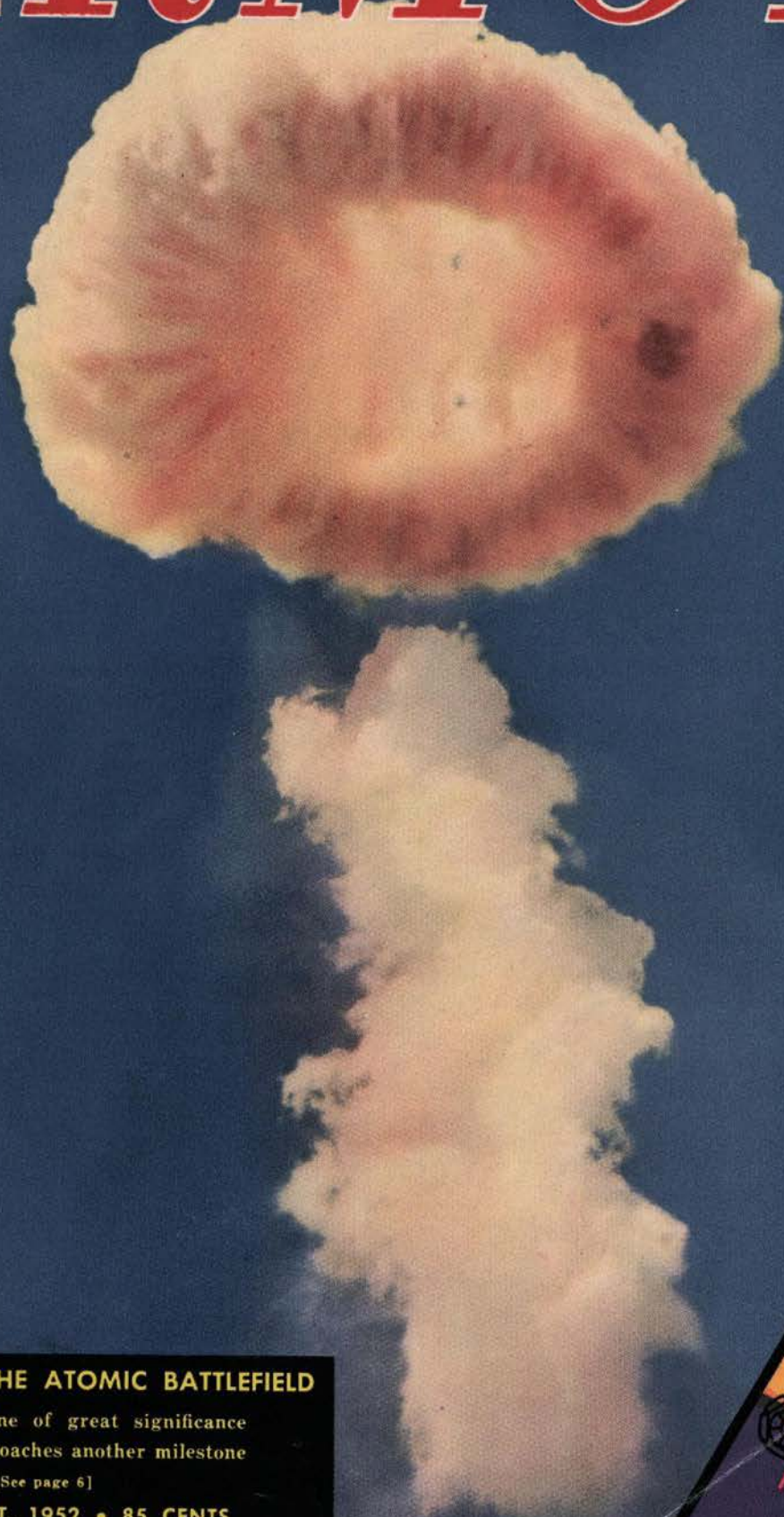
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# AMERICAN FOREIGN POLICY AND THE SEPARATION OF POWERS

by Daniel S. Cheever

and

H. Field Haviland, Jr.

A glance at today's headlines gives ample evidence that the weakest and most critical link in the process of making United States foreign policy is the relation between the White House and Capitol Hill. The authors of this book describe how, under our present constitutional and administrative setup, United States foreign policy is made; show, with pointed case histories, how the system has in the past failed to operate successfully; and make urgent and cogent recommendations for the revision of our present procedures so that the United States may achieve the dignity and efficiency in her foreign policy making that is required by her position as one of the two world powers. The division of authority between President and Congress on foreign-policy questions promises to be a major election issue this year.

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## LETTERS to the EDITOR

### Armor Association ROTC Recognition

Dear Sir:

As an officer who received his regular commission via the ROTC Honor Graduate Program (University of Georgia, 1948) I'd like to congratulate ARMOR and the U. S. Armor Association for their inauguration of the Armor Association awards to outstanding senior cadets in Armor ROTC.

Why not go a step farther and set up some sort of program whereby the Armor Association would sponsor a trophy to be presented to the outstanding Armor ROTC unit on the basis of a yearly performance, both at summer camp and on the campus. I'd like to throw this out for some discussion to other ROTC officers. And if you should start such a program, count on me for the first contribution toward the trophy.

LIEUTENANT EUGENE M. DUTCHAK  
Hq., 2d Armored Cavalry Regiment  
APO 46

### Combat Recognition for Armor

Dear Sir:

While in Korea this organization was employed in close support of infantry units. In almost every case, equal hardship and danger were shared by infantryman and tankers. As we look at the situation, all elements of a tank-infantry team should be on an equal status.

The infantryman has his Combat Badge to show for the effort he has expended, while the tanker, who was right up there with the foot soldier, has nothing. The men of this battalion keep asking "Why?" and this is probably the same in any other armored unit. We cannot supply them with the answer.

The demand for recognition as combat tankers is so great that B Company has submitted a suggested design for a

Combat Tanker's Badge. The drawing is by Corporal Pryor C. Mixon, Jr.

We are forwarding the drawing to you in the hope that you may be able to supply us with an answer. Or you may be able to give some publicity to the fact that of the three combat arms of the U. S. Army, Infantry, Armor and Artillery, only the infantryman has a distinctive insignia to show he has been in combat.

Any aid that you may be able to give us in our crusade for recognition as "Combat Tankers" will be greatly appreciated.

Sincerely yours,

LT. COL. VICTOR B. FOX  
CO, 70th Tank Battalion

APO 201



Badge with background field in yellow.

### Reserve Interest

Dear Sir:

I am very much interested in your association and the magazine that you publish. I read every issue, as it is placed on the magazine rack in the Unit Instructor's office, and find it filled with information along armor lines—information offered by no other publication known to me.

I am a Reservist assigned to a heavy tank company in the Organized Reserve Corps. I have been assigned to this company for three years, am now a platoon sergeant, but hope to receive my commission in the near future.

I am enclosing \$8.00 as advance payment for a two year subscription. I

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**Rates:** See bottom of contents page.



trust that I am acceptable for membership in the Association.

Yours truly,  
SERGEANT JAMES W. NEWMAN  
4127 No. Commerce Street,  
Stockton, Calif.

### More on Night Firing

Dear Sir:

In answer to the letter of Lt. Long in the March-April issue of *ARMOR*, may I offer some comment on night firing. While a member of the Tank Company of 2d Battalion, 6th Armored Cavalry, I took part in night fire training similar to that suggested by Lt. Long.

The 3d Platoon and the Headquarters Tank Section were given a defense situation with the mission of covering bivouac area approaches from armor attack at night. 1st and 2d Platoons were given the mission to advance to contact, then set up a base of fire for infantry dismounted attack along an axis of advance aimed at the bivouac area.

Setting up range cards, using azimuth indicators and quadrants before dark, the defensive team had likely avenues well covered. When the attack team came in view (with noise and M26 back flash from exhaust as target location) the fire fight got under way, with 90mm blank ammo. After the initial planned barrage, targets were picked up by muzzle flash on both sides.

The following evening the sides were reversed. This was followed by service firing at targets picked out during daylight. Tank positions were staked, deflection readings, taken from aiming stakes with lights, were read on azimuth indicators, and elevation readings were recorded by setting direct fire sight with correct range hairline on the center of the mass and then reading the gunner's quadrant. Tanks were moved out of position and returned after dark to their stakes. Three rounds were fired—one center, one L 5 mils add 200, one R 5 drop 200. This gave an area coverage insuring a target hit. WP shots could be seen and evaluated immediately. HE shots were evaluated the following morning.

As a result of this training, our Tank Company can accomplish night fire missions. The necessary training time included 3 hours Instruction on Principles; 8 hours Preparation and Conduct Night Blank Fire (2 nights and 1 hour critique); 4 hours Preparation and Conduct Night HE & WP Fire; total, 16 hours. It pays big dividends.

None of these ideas are new. FM 17-12 covers the subject. However, it is up to junior Armor officers to use their initiative and imagination in training the men they will fight with. It is up to their superiors to allow the full play of that initiative, in training as in combat. It is this very flexibility and delegation which makes our branch effective—on the range and on the battlefield.

LIEUTENANT THOMAS W. STOCKTON  
U. S. MAAG Portugal  
Lisbon, Portugal

### Tanker Reaction

Dear Sir:

While reading the March-April issue of *ARMOR* I came across a little item that displeased me and I'm sure many other tankers. It was the News Notes coverage of the remarks of the British officer on our tanks and the Centurion in Korea.

I think he is a bit mistaken when he says our tanks are made for Hollywood, not fighting. I've been on an M26 tank for two and a half years, and even though it isn't the latest, I think it's a darn good piece of equipment. I've seen the Centurion, and I don't agree that it's so superior to the M46. I've followed the war in Korea through the *Stars & Stripes*, and it seems to me that our tanks are turning in a good job on the record.

I wonder what the British officer thinks of the M47 tank, our new medium. I've seen it, and at first look I was pleased, for right there many of us tankers felt we had our dream tank come true. (M47 mediums are in Europe—Ed.)

SERGEANT PHILIP R. KUKLA  
2d Armored Cavalry Regiment  
APO 46

## RED FLAG IN JAPAN: INTERNATIONAL COMMUNISM IN ACTION

by Rodger Swearingen  
and Paul Langer

This book tells the story of the Communist movement in Japan from its beginnings almost to this moment. The authors have gathered and correlated a mass of uniquely revealing materials: secret documents of the Imperial Japanese government; Communist Party literature, both official and unofficial; the revealing reminiscences of high-ranking Japanese Communist leaders who have left the Party; and data from Soviet and Chinese sources. Based on this material, the book gives a far more complete account of a Communist Party's underground activities than is available for any other country. At the same time, it presents the first comprehensive view of the operations of another highly secret organization, the Imperial Japanese government's Special Higher Police (the "Thought Police")—the Communist Party's bitter foe. There are also startling revelations about the Japanese Communists and the North Korean Communist offensive.

\$5.00



### THE COVER

Seven years ago this July the first man-made atomic explosion rocked the desertland of New Mexico. Since that historic occasion, some thirty atomic instruments have been exploded by the United States, two in actual warfare, the remainder in tests at various proving grounds. *ARMOR*'s cover spotlights a recent Nevada shoot in a series testing tactical application of atomic weapons for the modern battlefield.



The average reader of this issue already will have looked over the front cover and turned to page 6 for the tie-in article. What will not be apparent there, is still another story that concerns this issue of ARMOR and our treatment of the atomic subject.

Many months ago we began mulling over a coverage of the obviously significant story of atomic weapons. About three months ago we reduced our thoughts to a coming issue and set down a prospectus. We tagged it to the July-August number (this issue you are reading) and set out to implement our ideas.

We visualized a treatment that would offer, first of all, a general coverage of the facts as released on our military atomic program to date—more or less of a roundup of the odds and ends to come from many sources over a long period of time. That would set the stage. Next we saw an article by an atomic scientist on the more technical background. In company with this we felt that an article by a branch member could put Armor in perspective in the picture. All of this, we thought, should be tied together by an editorial. And finally, the story should be topped out with a front cover to set it up.

With that program lined out, how did we fare?

Let's take the cover first. As you see, it is a full four-color-process photo cover. It is the first to appear on this magazine in its sixty-four years of publication.

A color cover takes time. We had to get it rolling early so that the engraver and the printer would have adequate time to handle it. After deciding that the shot should be color, should be of one of the Nevada tests, and ideally should show tanks in the foreground advancing into a blast area with the familiar mushroom blossoming in the background—after deciding this and doing

lots of digging we got as close to the ideal as possible, the present cover. The Marines, the Infantry and others had their ideal readily available in a good selection of shots. The one blast in which Armor took part in the tactical follow-up situation took place before dawn. We couldn't even fake it.

In designing the cover well in advance of the collection and preparation of the material that was to follow it inside, we had the problem of the limitation imposed in writing the cover caption. The major title, the date and price were easy, but what could be said that was specific and could relate to the inside when so many doubts exist on article content right up to the moment of closing an issue? It could only be general. It's the phrase you see on the cover.

With the cover designed and sent off to the engraver, we reviewed our approaches to article sources. On the scientific end we had gone to a wartime atomic scientist. He agreed to do an article.

On the branch end we had talked things over with a qualified officer presently assigned in the office of the Undersecretary of the Army. He was prepared to do an article.

In the line of getting a qualified person to do a roundup of the atomic story up to the moment, there were difficulties. People were too busy, security was touchy, perhaps some were passing the buck.

At that point we assembled some material, went out digging, tramped a beat around the Pentagon, the Atomic Energy Commission and the Capitol, pulled in more material, got permissions, then sat down on the Independence Day weekend. The result—the editorial story we call "The Atomic Background." What happened to the rest of the program?



We had the articles by the scientist and branch member. We wrote what we thought was a pretty fair editorial pulling the story together. All of this required clearance: and it is even yet in a security check that is time-consuming and extends far beyond our deadline. Whether we will be able to offer the material in a later issue is in doubt. At the present we are reduced to the cold record, which is ready for you when you turn the page.

And so a carefully planned issue just fell to pieces; failed to pan out despite planning and pushing and plenty of time to do the job. This is one of the headaches of magazine making, especially when it is in the military field where security enters the picture to such a great extent.

We had a similar case involving this present issue and its predecessor, the May-June number, on a tank story.

If you recall, we had a front cover and four inside pages, including two of pictures, on the new M47 medium tank. At the time that last issue was making up, the M47 break was an important one, of solid value to our branch. But . . . no one could tell us as we led up to that issue that the story on the M48 would be released in a matter of weeks, and before the next issue fell due. As a result, the M47 got a proportionally larger play than the M48, although the latter, a completely new tank, has greater significance to our branch than the M47, which is more a modification than an original tank.

Getting back to this issue, things were in the air as we pulled in to the deadline with an editorial and two articles redlined. The problem of balance of material remained, the standard slots for editorial features had to be held with some degree of continuity, and a total of sixty-four pages were to be filled.

The moment when an issue is closed and you sit

down to line out the page-up from one through sixty-four is interesting. You drop your conventional features in their usual places and then begin filling from front to rear with your major articles in the order of importance and in keeping with balance. You have the elements of uneven pages to articles; of those articles which should have a two-page open spread to lead off; and of having odd pages that must be filled to even out.

By that stage you will often have counted how many pages of material you have, and will have brought certain features along and let others ride for the next issue; or you may be in a tight fix for enough good material to make up a book.

When, on the day before closing this issue, we knew the bad news on material touching upon security, we took stock once again. The total—sixty-two pages. Two short!

Reconnoitering was not figuring in the issue up to then. We had decided to leave it out, as the large number of editorial items in the issue had put the load on us. But we had specified page 6 on the front cover as the atomic story, and we had the page 4-5 slot open for a two-pager, and the space was not required elsewhere, so you are in on this background story of some trials and tribulations.

From your end it may not seem to be an issue that didn't work out as planned. Perhaps you see it as a normal issue although, come to think of it, there is no such thing. For our part, we're inclined to glance over to a copy of *Collier's* that reposes next to our desk with a large batch of material on the little old atom. The cover bills Dr. Ralph Lapp's story, "Too Many Secrets Spoil the Atom." We might add . . . "to say nothing of magazines."

*The Editor*



# ***The Atomic Background***

## **CALENDAR OF NUCLEAR DETONATIONS BY THE UNITED STATES**

No.	Date	Place	Code Name
1.	July 16, 1945	Alamogordo, New Mexico	TRINITY
2.	August 6, 1945	<sup>1</sup> Hiroshima, Japan	.....
3.	August 9, 1945	<sup>1</sup> Nagasaki, Japan	.....
4.	July 1, 1946	Bikini	CROSSROADS
5.	July 25, 1946	Bikini	CROSSROADS
6.	Spring of 1948	<sup>2</sup> Eniwetok	SANDSTONE
7.	Spring of 1948	<sup>2</sup> Eniwetok	SANDSTONE
8.	Spring of 1948	<sup>2</sup> Eniwetok	SANDSTONE
9.	January 27, 1951	Las Vegas, Nevada	RANGER
10.	January 28, 1951	Las Vegas, Nevada	RANGER
11.	February 1, 1951	Las Vegas, Nevada	RANGER
12.	February 2, 1951	Las Vegas, Nevada	RANGER
13.	February 6, 1951	Las Vegas, Nevada	RANGER
14.	Spring of 1951	<sup>2</sup> Eniwetok	GREENHOUSE
15.	Spring of 1951	<sup>2</sup> Eniwetok	GREENHOUSE
16.	October 22, 1951	Las Vegas, Nevada	BUSTER-JANGLE
17.	October 28, 1951	Las Vegas, Nevada	BUSTER-JANGLE
18.	October 30, 1951	Las Vegas, Nevada	BUSTER-JANGLE
19.	November 1, 1951	Las Vegas, Nevada	BUSTER-JANGLE
20.	November 5, 1951	Las Vegas, Nevada	BUSTER-JANGLE
21.	November 19, 1951	Las Vegas, Nevada	BUSTER-JANGLE
22.	November 29, 1951	Las Vegas, Nevada	BUSTER-JANGLE
23.	April 1, 1952	Las Vegas, Nevada	TUMBLER-SNAPPER
24.	April 15, 1952	Las Vegas, Nevada	TUMBLER-SNAPPER
25.	April 22, 1952	Las Vegas, Nevada	TUMBLER-SNAPPER
26.	May 1, 1952	Las Vegas, Nevada	TUMBLER-SNAPPER
27.	May 7, 1952	Las Vegas, Nevada	TUMBLER-SNAPPER
28.	May 25, 1952	Las Vegas, Nevada	TUMBLER-SNAPPER
29.	June 1, 1952	Las Vegas, Nevada	TUMBLER-SNAPPER
30.	June 5, 1952	Las Vegas, Nevada	TUMBLER-SNAPPER

<sup>1</sup>Only atomic bombs used in actual warfare. Code names still classified.

<sup>2</sup>Specific dates are classified. In Operation GREENHOUSE during April and May of 1951 it was announced that "tests" (plural) were held; therefore, two blasts are counted. The exact number of tests has never been announced.



*Seven years ago this summer  
the first atomic bomb was set off.  
Numbers 2 and 3 were dropped in warfare.  
Today we find attention on tactical application.  
Here are some gleanings from the record on  
this critical weapon which is ever more  
significant to the ground soldier*



#### APPROPRIATIONS FOR EXPANSION OF ATOMIC PROGRAM

MR. DEAN. The members of the Atomic Energy Commission are appearing before you . . . [House Appropriations Subcommittee] in support of the President's request for \$3.2 billion of new obligational authority in 1953. All but \$267 million of this amount is needed to build new and additional facilities throughout the entire atomic energy production program. Having a total estimated cost of \$3.9 billion, the proposed expansion program would greatly increase the rate of raw material procurement, fissionable material production, and weapon stockpiling.

We are well aware of the fact that this is no ordinary budget request.

We know that it involves a very large sum of money—the largest single sum ever requested for the national atomic energy program.

We know, too, that it involves a very large construction effort that will inevitably make heavy demands upon many critical skills and materials that are in short supply.

And we know that it comes at a time when other defense expenditures are extremely high. . . .

And yet we have concluded that this request must be made. As a matter of fact, we strongly believe—on the basis of all the information we have had—that we would be grossly derelict in the discharge of our responsibility if we failed to make it, and if we failed to make it at this time. I say this for several reasons:

First, through studies by the Department of Defense we have been assured that a real military requirement exists for the weapons to be produced by this expansion and that they are vital to our national security in the event of all-out war.

Second, through discussions in the National Security Council, we have assured ourselves that this expansion is in keeping with our national interest and our national strategic planning.

Third, through a number of recent developments, we

have assured ourselves of a uranium ore supply sufficient to support an expansion of this magnitude.

Fourth, through studies made by our own people and by the Office of Defense Mobilization, we have been assured that an expansion of this magnitude can be undertaken and brought through to completion without adversely affecting the national economy.

In other words, we have the means for carrying out this expansion program, and the Nation has a real requirement for the weapons it will produce. It is with this firm knowledge that we make this request for funds.

The setting in which this request is made stems from recent revolutionary developments in the field of atomic weapons technology. Through these developments, the whole concept of how atomic weapons can be utilized in warfare has been radically revised.

No longer are these weapons looked upon only as devices to be used in an "Hiroshima-type" way against cities and industrial areas. It is now possible to have a complete "family" of atomic weapons, for use not only by strategic bombers, but by ground-support aircraft, armies and navies.

The Department of Defense is very much aware of this change in concept, and atomic weapons are being incorporated into the operational plans of all three of the armed services.

This, quite naturally, has greatly increased the demand for atomic weapons—to an entirely different magnitude than it was a few years ago.

It is the purpose of this expansion to meet this demand, and to meet it as soon as possible.

We could, of course, meet this demand eventually with the facilities we now have on hand or are building. But we would meet it much later. This new expansion is designed to reach the minimum military stockpile requirement at least 4, and possibly 5 years earlier than would otherwise be the case—4 years in which I think we can be sure the Soviet Union will not be idle.—Gordon Dean, Chairman, Atomic Energy Commission, Before House Appropriations Subcommittee, June, 1952.



## MILITARY REQUIREMENTS IN ATOMIC EXPANSION

GENERAL BRADLEY. With your permission, Mr. Chairman, I should like to insert in the record an unclassified brief statement of the views of the Joint Chiefs of Staff and myself concerning the expansion of the Atomic Energy Commission facilities, the budget for which your committee now has under consideration.

We are well aware that this budget involves a very large sum of money and that implementation of the program will make heavy demands upon skilled labor and materials in short supply. This does not deter us from giving our wholehearted support to the expansion program being considered. I am not here to justify a budget. I am here to justify an expansion program.

The basis for this program is the military requirements of the Armed Forces. The basis for these military requirements is the prime objective of our military preparedness program, which is, with the assistance of friendly nations, to avert military aggression, or if it should come, to defeat such aggression.

Today we are engaged in an accelerated program to increase our atomic strength with the hope of promoting an enduring peace. Atomic weapons, because of their complexity, and the numbers and complexity of the plants necessary to manufacture their components, are characteristically the products of a nation with a mature industrial position. However, our industrial potential might be outweighed by a nation with a lesser industrial capacity which can, with a disproportionate effort in the atomic field, equal or surpass our own production. Our effort must be more productive than that of our probable enemy; if this requires an all-out effort on our part, then this is what we must do. But this program is by no means an all-out one. It is the result of a carefully calculated analysis of the role of atomic weapons in augmenting our military capacity to meet our minimum requirements in the shortest practicable time.

We place enormous reliance on atomic weapons to provide for our national security. Our present plans are based upon maximum exploitation of these weapons. These plans include the end products of the proposed expansion program. Failure to get this program, in its entirety, under way at the earliest possible moment, will have a seriously crippling effect on military plans and capability.—General Omar N. Bradley at Hearings Before the House Appropriations Subcommittee, June, 1952.

## SECURITY CLASSIFICATION AND THE ATOM

Our reliance upon our Atomic Wall to protect our atomic secrets has been shortsighted and costly. We have tried to achieve national security through a Mother Hubbard complex—by locking A-secrets inside thick steel cupboards. In the process, we failed to inquire into the anatomy of a secret, to see if there were, in fact, any secrets or to determine if they could be kept. This policy has not prevented the Soviets from producing the A-bomb, nor will it prevent the Soviets from producing more and better bombs. The lesson for us to learn is that you do not stay ahead of an enemy by stultifying secrecy, but only by a policy of dynamic achievement.

Should we fail to learn this lesson, our Atomic Wall may well prove as deceptive to us as the Maginot line proved to the French.—Dr. Ralph E. Lapp in Collier's, July 5, 1952.

## AUTHORITY TO USE THE A-BOMB

*Who can direct that atomic bombs be used militarily?*

Only the President has the power to authorize military use of the A-bomb. Strict procedures have been established to ensure that no lesser individual is in a position to order its use.—Dr. Ralph E. Lapp in Collier's, February 16, 1952.

## THE A-BOMB AND KOREA

*Why wasn't the A-bomb used in Korea?*

Fundamentally because there were no really good tar-



An officer inspects an M24 tank for radiation following a Nevada test blast. Troops move into a blast area to inspect an M46 and 105mm piece for damage.





gets for it. North Korea did not present any appropriate strategic cities as targets, and the battle front stretched over many miles of mountainous terrain. Chinese Communists and North Koreans were strung out in valleys and on hillsides, very often well protected in deep shelters. It would have been a waste of atomic ammunition to use the A-bomb. Furthermore, it would have added fuel to the Communist propaganda fire about the American "aggressor."—Dr. Ralph E. Lapp in *Collier's*, February 16, 1952.

### A-BOMB EFFECT ON A DIVISION

*Can one A-bomb wipe out a whole enemy division?*

Theoretically, yes; practically, no. If the 10,800 soldiers comprising a Red Army rifle division were to be drawn up for parade-ground drill in close-order formation, then a single well-placed A-bomb would annihilate the entire division. Some congressmen, returning from the Nevada A-tests, have made fantastic statements about the tactical A-bomb, based largely upon a misconception of how soldiers are arranged on the battlefield. In practice, troops usually disperse over a wide front, with a single division assigned to hold five or six, or even more, miles of the front line. Under such conditions, remembering too that many troops hole up for protection, a single A-bomb would probably not destroy more than 15 per cent of the division. And even this is a liberal estimate.—Dr. Ralph E. Lapp in *Collier's*, February 16, 1952.

### THE ARMY'S ATOMIC DOCTRINE

Although it is too early to foresee the ultimate effects which atomic weapons will have on ground warfare, certain influences are already apparent. It is clear, for instance, that the threat of atomic weapons in future ground warfare will necessitate much greater dispersion of both attacking and defending forces. Great concentrations of troops and matériel, such as occurred in the Normandy invasion, would assuredly invite atomic attack.

In fact, tactics in an atomic war may include attempts to force an enemy to concentrate so that he will present a remunerative target for an atomic weapon. Meanwhile, other things being equal, atomic weapons could favor a defender who had the opportunity to build strong and dispersed defensive positions, particularly below the ground's surface.

Compulsory dispersion of ground units to present unprofitable targets for atomic weapons would bring problems of control and communication. Dispersion of combat units and supply forces makes both more vulnerable to guerrilla attacks from enemy partisans. Troop organization to meet this type of warfare might take the form of small, but heavily armed and self-contained units. To cope with guerrilla attacks—such as we encountered in Korea—soldiers of the so-called rear echelon would have to be trained and equipped to defend themselves to an even greater extent than in the past.

The availability of tactical atomic weapons would place high premium on alert combat intelligence agencies. Many appropriate targets such as troops massing in the open for an attack, a river crossing, or an amphibious landing would be fleeting in nature. Aggressive patrolling, skillful and speedy interrogation of enemy prisoners, and the intelligent use of undercover agents would help identify and evaluate these targets in time to engage them with atomic weapons.

I have mentioned these concepts in general terms to give some indication of the thought your Army is giving to its role if a general war should ever come in the Atomic Age. Our doctrine is, of necessity, flexible and varies as new technical developments and weapons appear. But we are evolving this doctrine and publishing it in manuals, consistent with security consideration, to keep our soldiers abreast of atomic developments and to accustom them to including atomic weapons in their tactical thinking.—Secretary of the Army Frank Pace, Jr., in a *New York City Speech*, May, 1952.



A Patton M46 tank is closely inspected by troops following a Nevada test shot. Armor and troops advance into a blast area on the heels of an atomic explosion.





## THE ATOMIC WEAPONS PICTURE

There is little doubt that the impact of atomic weapons will eventually bring significant changes in your Army's preparation in case of war to pursue its traditional mission of closing with and destroying a ground enemy. In the meantime, we seek to stock our arsenal with weapons rather than blueprints. As atomic weapons pass from blueprint to hardware, we are adding them to this arsenal. At the same time we are aggressively seeking to eliminate those weapons which may be safely regarded as replaced by this new hardware. Decisions on what weapons to replace are difficult at best, but we realize that such eliminations must be effected if we are to preserve the economic as well as the military security of this nation.

It is too early to determine, with any degree of accuracy, the influence which atomic weapons will have on the "cost factor" of our armed strength. We are satisfied that they will eventually provide a greater return in military power for the defense dollar than some of our conventional weapons now afford.

Since Hiroshima, we have made dramatic advances in creating a family of atomic weapons—each tailored to perform a specific mission with maximum effectiveness. These advances give great promise of peace and liberty to the Free World—unless the free peoples misinterpret them as a signal that they can shirk the distasteful burden of defense. If this should happen, the Atomic Age could become synonymous to future historians with the Age of Slavery.—*Secretary of the Army Frank Pace, Jr., in a New York City Speech, May, 1952.*

\* \* \*

The use of atomic weapons on the battlefield is of tremendous importance to the Army. Our problem is involved in placing the fissionable materials relatively close to our own front lines under all weather conditions and sometimes on very fleeting targets of opportunity. This demands accuracy and dependability. That is why we have been developing an atomic artillery piece. It is a means of delivery which has been completely proven over many years and it is the first means of battlefield delivery under all weather conditions which we can get in the hands of troops. It is not the ultimate in Army weapons but it is an extremely effective weapon. Furthermore, it is very mobile under adverse cross-country conditions and is versatile in that it can shoot conventional as well as atomic shells.

Ultimately, as guided missiles are perfected, they will also aid in delivering fissionable materials by the Army in close support of Army forces. But the important factor is that we now have the gun and we want our field commander to have the capability of placing powerful atomic explosives safely and accurately close to our lines in darkness or in bad weather if it ever should become necessary. That is the reason for the emphasis on the artillery piece.—*General J. Lawton Collins in a Speech at Los Angeles, California, May, 1952.*

### DEVELOPMENT OF DELIVERING VEHICLES

MR. THOMAS. Are the armed services relying exclusively upon the Atomic Energy Commission to develop

the atomic weapons? By that I mean the field pieces, the artillery pieces, and so forth and so on?

GENERAL BRADLEY. No, sir; we do not depend upon the Atomic Energy Commission for that.

MR. THOMAS. What are the armed services doing in that field now?

GENERAL BRADLEY. Well, sir, General Loper or Mr. LeBaron, either one, can give you more up-to-date information on that than I can. . . .

GENERAL LOPER. As to the delivery vehicles, that is the job of the armed services. The vehicle used in that sense means the thing which gets it to its target. The vehicle takes the bundle of atomic energy for explosion. That is the job of the armed services.

In the artillery we have gone so far as to develop the . . . which has already been proof-tested, for which the Atomic Energy Commission has provided ammunition.

In the guided missile field, . . . which will carry atomic warheads. Again, the Atomic Energy Commission provides the warheads.

These missiles are not designed to carry that warhead exclusively. They can be adapted and used for the high explosives or other munitions, if desired, but their primary warhead will be an atomic warhead.—*Generals Omar N Bradley and Herbert B. Loper in Hearings Before House Appropriations Subcommittee, June, 1952.*

## THE ARMY'S ATOMIC GUN

We have the prototype of an atomic gun, and are training "atomic artillerymen" to use it. This newly developed atomic gun can give the ground commander tremendous fire power at his finger tips and directly under his control. Like conventional artillery, it would be especially effective in defending against attacking ground forces obliged to mass and expose themselves in an assault. Unlike an air-delivered atomic weapon, the atomic gun can function in all kinds of weather, night or day. It is essentially an artillery piece—but with immeasurably greater power than any artillery hitherto known. Carried on a platform suspended between two engine cabs at front and rear, this highly mobile atomic weapon can travel at a speed of about 35 miles per hour on highways. Weighing about 75 tons, it can cross bridges which Army engineers are already trained to build for present heavy divisional equipment. It can travel cross-country, fit into a landing ship designed for amphibious operations. It can fire with accuracy comparable to conventional artillery, and tests indicate it is much more accurate at long ranges.

In short, the atomic gun can, with the sureness of the traditional field artillery piece, hit its target under any weather conditions and give ground troops the kind of devastating close support never before available in warfare.—*Secretary of the Army Frank Pace, Jr., in a New York City Speech, May, 1952.*

## ARMOR AND THE ATOMIC BATTLEFIELD

The assignment of Army units to participate in atomic tests indicates the advances made in the development of atomic weapons and the focusing of attention upon tac-



tical application. In view of these developments, the moment certainly is at hand for a closer look at the ground combat picture as it concerns atomic warfare.

Considering all of the angles, there are certain conclusions to be drawn in reference to the battlefield. They are conclusions that hold great import for Armor.

The tactical use of atomic weapons will multiply the value of mobility in the combat zone. Mobility will be a primary means of protection, for dispersion will be ever more important should the enemy employ atomic weapons.

At the same time that mobility is essential for dispersion as a manner of tactical protection, so too will it be essential for the rapid concentration of units at decisive points. Mass employment must still be the basis for decision.

Armor is ideally suited for rapid dispersion and rapid concentration.

An atomic blast on the battlefield, of whatever proportion, will blanket a sizable area, an area much larger than that covered by our so-called conventional weapons. It will saturate an impact area, and will obviously require individual protective measures far advanced over those now in use.

We have followed the long series of atomic experiments applied to ships, submarines and planes. As the tests go forward in Nevada, we are seeing this application extended to ground equipment.

The assignment of Army units to the tests was accompanied by the explanation that these troops would set up a battalion position as executed on a battlefield, with foxholes, wire entanglements, and so on. It is said that equipment was placed in the position, including tanks and artillery.

Observer troops were permitted to move into the blast area to see the effects on the positions they had set up, and to examine vehicles. Damage to vehicles was reported as moderate, and the Army stated that "they still could have been used."

Armor appears to be the ideal basis from which to perfect the new defensive measures which will be required for survival on the atomic battlefield. It seems logical to assume that proper protection will be forthcoming only when ground personnel in the battle area are mounted in fully mobile armored vehicles whose characteristics include protection from blast, heat and radiation. Much of the framework exists right in our present vehicles.

Only a force mounted in vehicles combining mobility, properly developed atomic protection and inherent fire power will be able to survive on the atomic battlefield and carry the fight to the enemy. Fundamentally, Armor is such a force.—*Editorial in ARMOR, November-December, 1951.*

### TRAINING IN ATOMIC WEAPONS

We [are not] restricting our training in atomic weapons to the publication of manuals. For some time we have been sending Army officers and Army civilian specialists to a joint service school at Sandia Base, New Mexico, where they study the characteristics and use of atomic weapons. We are introducing courses in atomic

warfare in all Army schools—from the most basic to the most advanced. These courses include the solution of actual combat problems involving the use of atomic weapons. We intend beginning individual and unit training in atomic warfare in the near future.

In conducting our training in atomic weapons, we have considerable experience to draw on within the Army. Remember the Army has played a major role in the planning and development of the atomic bomb since its inception. The Army contributed both technical experience and organizational ability to the historic Manhattan Project which produced the first atomic bomb. And it was an Army engineer, General Groves, who headed and organized this great undertaking.

Starting with Exercise Southern Pine last August, we have included the simulated use of atomic weapons in all our major maneuvers. In March, I witnessed the simulated firing of an atomic gun during Exercise Longhorn in Texas, and I was impressed by the realistic manner in which our troops used this powerful new weapon to complement their conventional weapons.

To some of the soldiers who participated in Exercise Longhorn, an atomic weapon was more than a concept. They had attended Exercise Desert Rock held last November in Nevada, to show thousands of Army observers what an atomic weapon can do—and what it can't do—to ground troops deployed in combat. During Exercise Desert Rock, we conducted Attitude Assessment tests among our soldiers both before and after the atomic demonstration. Couched in GI, rather than scientific language, test findings included these typical comments: "The foxhole is still a wonderful invention!" "I would trust the atomic bomb as a tactical weapon." "You can't research the infantry out of business." The results of this test will be useful in the indoctrination of Army troops in future demonstrations.—*Secretary of the Army Frank Pace, Jr., in a New York City Speech, May, 1952.*

### TESTING AND TROOP INDOCTRINATION

Nothing was assumed at Exercise Desert Rock—when atomic power was proved a weapon of tactical warfare.

Only the substitution of sheep for soldiers in the close-up field positions and the safety and security measures enforced for the history-making test made the atom bomb explosion an experiment.

The huge explosion was that of a "typical atomic bomb." The field positions and Army equipment were standard. This was the test to prove the tactical value and use of a new weapon of warfare.

As explained to the more than 5,000 soldiers who had ringside seats, the mission was:

1. To indoctrinate the personnel on the tactical use of atomic weapons.
2. To test the psychological reactions of troops involved in such a test.
3. To accomplish tactical doctrine tests to the fullest extent possible.

It was further explained that the troops should derive considerable information from the test and that officials should learn much about the protective measures possible in connection with tactical use of such a weapon.



The soldiers were told that the bomb was "not unlike those dropped at Hiroshima or Nagasaki."

Before the big blast, a briefing officer told the nervous troops, "We can't belittle a bomb which killed 100,000 people, but we can put it in its place."

The pre-explosion information talk paved the way for what followed. Soldiers learned for themselves what the bomb can and cannot do.

After the brilliant flash, the swirling dust, the rolling ground shock, and the ear-ringing boom, they were taken forward of their safe observation station to see what had happened on and under the ground in prepared field installations.

They learned that a foxhole would have offered them safety at an incredibly short distance from the center of the explosion, that radioactivity is not an all-inclusive danger, and that the ground would not be denied to use of ground troops a few minutes following the blast.

Security regulations surrounding many of the technical aspects of the test will not be relaxed but the troops were urged to disseminate as widely as possible those things which they observed and learned at Desert Rock.

Without giving away valuable secrets, the Army seeks to dispel the unjustified awe and fear of atomic energy—without minimizing its tremendous power and potentialities.—*Department of Army News Feature Release, November, 1951.*

\* \* \*

More than 5,000 soldiers of the United States Army learned two important lessons from the atomic bomb tests recently completed in Nevada.

They learned first-hand from Exercise Desert Rock that atomic weapons can be used to tactical advantage, and they were convinced that they can protect themselves against atomic power.

Minutes after the terrific atomic explosion boiled its way skyward, infantrymen walked through the blast area—dispelling a widespread but erroneous belief that radioactivity would kill anyone entering the area. Scientists and some military men already knew this. The troops know it now and one of the biggest bugaboos of the atom bomb has disappeared.

Without minimizing the appalling effects of the world's most powerful weapon, the tests showed that soldiers properly concealed in foxholes would have been perfectly safe at an incredibly short distance from "ground zero"—the spot directly under the explosion.

On the day of the blast, soldiers had prepared typical battalion defensive positions—foxholes, revetments, barbed wire, machine gun and recoilless rifle emplacements, artillery positions, even communications switchboards. All the normal equipment of a battalion was there. Nearby were tanks, planes, jeeps, guns, individual equipment, and a few sheep, to represent living objects.

Soldiers were drawn back about seven miles from the point of ground zero. These included combat men from the Eleventh Airborne Division, a field artillery battalion, an engineer battalion, and a medical platoon. In addition, there were officers and enlisted men from all divisions in training, school staffs and faculties, replacement training centers, Army headquarters, Corps headquarters, and all other major Army commands. Repre-

sentatives also were there from the Navy, Air Force, and Marine Corps.

All were excited, some were apprehensive, and everyone looked forward to seeing complete devastation after the detonation of the bomb.

A loudspeaker blared last-minute instructions. Then the plane was sighted. Tension mounted as the troops were ordered to face the opposite direction from ground zero. Why face the other way? So they would not see the initial flash, become temporarily blinded and miss the rest of the spectacle.

On the PA system, an announcer counted off the seconds: "Bomb away!"

Seconds later, a blinding flash of white light—seen for hundreds of miles—outshone the brilliant desert sun.

"Turn!" came the order from the PA system. More than 5,000 men wheeled in their seats to stare at the fantastic sight. Above the desert floor the fireball had formed—breathtakingly bright. On the ground, a dust cloud climbed hundreds of yards and spread for miles in every direction.

Then the ground began to heave and sway. As the shock wave rolled past, the column rising above ground zero began to emit boiling blue and purple. Then the sound—a tremendous crack—snapped back the heads of the awed soldiers.

There were no shouts. Instead was heard a jumble of sounds from more than 5,000 throats. Finally one soldier said, "Well, at last I know where ground zero is." It was the first coherent statement heard.

Moments later, the gigantic pall had risen 20,000, then 30,000 feet into the sky. High winds caught it, and it began to drift toward the mountains. For two hours it continued to boil in a fantasy of color.

An Army helicopter from the command post thundered overhead, on its way to ground zero with testing instruments. The road began to fill with vehicles, loaded with evaluation teams with instruments. As they raced toward the blast center, they checked for radioactivity. The soldiers mounted their vehicles and joined in the race for ground zero.

Realization then began to hit the soldiers. They were in no danger from radioactivity. They could attack through such a blasted area in combat just as they were driving through it now. There was no danger.

Two miles from ground zero, the terrible effects of the explosion began to become apparent. Had there been buildings in the area, they would have been demolished.

Much closer to ground zero, vehicles and other equipment under cover were examined. They showed effects of burns, but damage was only moderate. They still could have been used.

No human being above ground could have lived in the first few seconds after the explosion. But below ground, or in pillboxes, the sheep were alive and unharmed—which meant that a soldier in similar positions also would have been safe.

The soldiers at Exercise Desert Rock learned that the atomic bomb can be highly effective in ground warfare—but the value of infantrymen has not changed. Properly trained, they can survive an atomic blast and still accomplish their mission.—*Department of Army News Feature Release, November, 1951.*



## FROM THESE PAGES

### 60 Years Ago

*The Carbine.* While the armies of continental countries, in the frantic race to anticipate their rivals in the possession of superior death dealing weapons, are adopting without adequate trial the magazine pattern, and finding when too late that repeating arms do not in all cases realize what is expected of them, we in the exercise of a wise conservatism, born partly no doubt of a thrifty sense of economy, have continued our faith in the Springfield pattern, the most simple and at the same time the most effective single leader of the age.

In the movements, which, according to this author, the magazine principle seeks to suppress, the advocates of the single-loader find their best argument, for no matter how short a time these movements may consume, they necessarily constitute a break in the operation of firing, during which the soldier's attention will, in a measure, be diverted from what is going on in his front; his excitement partially subdued, he will be more amenable to fire discipline, because more liable to hear the commands of his officers, and in every way better qualified to act coolly and intelligently than if armed with the magazine weapon, where the "pumping" the cartridges and the pulling the trigger are movements so nearly alike, and occur so closely together, that, under the fever of excitement, induced by his surroundings, he is liable to forget which he is doing, and thus throw his shot away. The Springfield rifle can be deliberately aimed and fired ten times in a minute (experts accomplish even a higher rate), and while a properly constructed magazine gun, if it held that number of cartridges, would probably be able to fire them in one-half the time, it would have to "hustle" to do it, and when done, every shot would, in all likelihood, have been unaimed, injuring the enemy, if at all, by accident only, the chief result being noise.

*The Troop in the Field—Equipment.*

CAPT. CHARLES E. NORDSTROM

### 50 Years Ago

I have been requested by the Executive Council of the United States Cavalry Association to write, as the President of the Association, an introduction to the first number of the *Cavalry Journal*, which is shortly to be re-published. This re-publication is to be commenced by the enthusiastic decision of a majority of the members of the Association.

I write this introduction gladly, with the wish that I had the requisite ability to place the matter in the strongest light. It is not necessary for me to enter into the causes which account for the non-appearance of the *Journal* since December, 1899. The Spanish-American War and the dispersion of the Cavalry on its legitimate service during that war are ample reasons for the discontinuance of the publication.

The re-publication of the *Journal* seems to be a fitting occasion to impress on the Cavalry of the Army the necessity for renewed effort to make the *Journal* a fit representative of the increased and new element of the service.

The work done by the Cavalry in Cuba, Porto Rico and the Philippines during the Spanish War, both mounted and on foot, demonstrates an increased sphere of action and usefulness, and has taught us lessons which prove that the opinions formed by our former officers of cavalry were correct, and that cavalry can be educated to fight on foot as well as on horseback.

This lesson is impressed by the war between the English and the Boers in South Africa. It is our duty

to elaborate these lessons. The increase of the cavalry arm of the service and the proportion of cavalry strength in the Army serve to impress this lesson. Everything points to the greater importance of the Cavalry, as considered in modern warfare, and of its growing utility. The celerity of its movements, even though the character of the terrain may require its action on foot, is much to its advantage in modern wars.

We have now in this country the *United Service Journal*, representative more especially of the Infantry of the Army, the *Artillery Journal* and the *Cavalry Journal*. These are all necessary under the changed conditions of the Army. It had been proposed to abandon the publication of the *Cavalry Association Journal*, but I am glad to say the proposition has not been concurred in.

The good effect of an association like that which has been in existence and is now to be resumed with the publication of the *Journal* is bound to be of importance in the future.

Let every cavalry officer, though he may subscribe to and support to the extent of his ability the other publications, do his utmost for the *Cavalry Journal*, and I am sure that success will crown the effort.

I have my doubts as to the wisdom of establishing branches of the parent association at small posts. But at all posts let the officers write and send what they have written to the *Journal*, and let the editor select all or part of the production for publication. Let all exert themselves in the direction of success, and success is sure to follow.

*I have been told by more than one officer whose advancement in the Cavalry service has been marked, THAT MUCH OF THE SUCCESS WAS DUE TO THE INFLUENCE OF THE STUDIES INDUCED BY THE CAVALRY ASSOCIATION.*

*A Word from General Merritt.*

MAJ. GEN. WESLEY MERRITT  
President, U. S. Cavalry Assn.

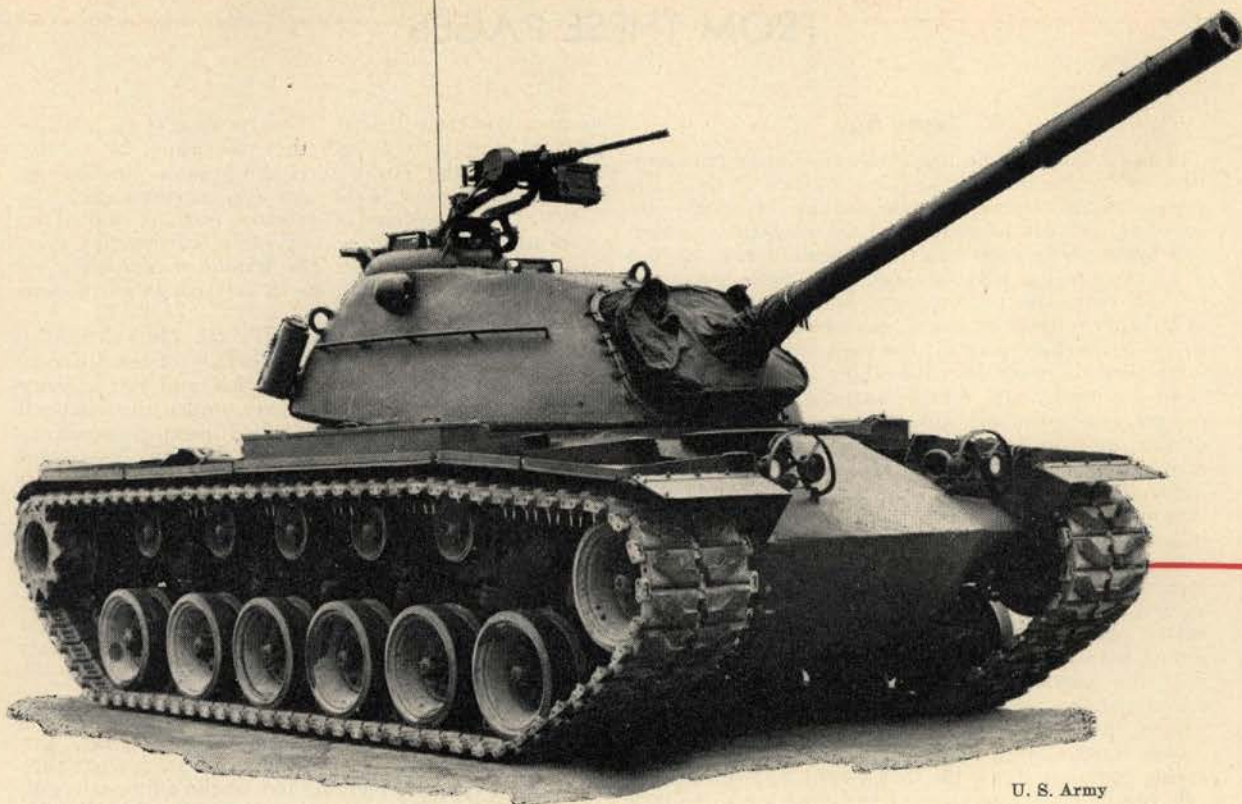
### 25 Years Ago

It may be safely stated as an axiom that cavalry attacks to be successful must be supported by an intense and effective fire power. We must have an armament which may be used to diminish enemy fire and thus secure power of movement. This means automatic weapons capable of high rates of fire. Equally important is the necessity for rapid fire weapons in the defense, if cavalry is to hold ground until it can be taken over by less mobile troops. With the obvious necessity for fire power, cavalry is confronted with the principle that maximum fire power and maximum mobility are incompatible. If we load ourselves down with heavy armament our power of rapidity and ease of movement will be decreased—this is obvious. The problem therefore resolves itself into one which requires adequate fire power for probable cavalry missions, attained by weapons which will not decrease mobility. In discussing mobility it is apparent that the larger the unit the less its mobility, relatively speaking. Therefore, a heavy weapon with great fire power may be suitable for the division, but entirely inappropriate for the troop. Armament also has a direct relation to the probable missions of a unit in time of war. Since the machine rifle is a troop weapon, its characteristics as applied to that unit, as well as the probable combat missions of the troop, should be inquired into.

*The Machine Rifle.*

MAJOR JOHN T. McLANE





U. S. Army

## New Striking Power for the Mobile Arm

**T**HE first completely new medium tank to be developed since World War II—the Patton 48—now is in production at three plants and sizable deliveries are expected before the end of this year.

Developed by Army Ordnance and the Chrysler Corporation, the Patton 48—known during the development stage as the T48—was unveiled by Secretary of the Army Frank Pace, Jr., in ceremonies at the Chrysler Tank Plant at Newark, Delaware, on July 1.

Secretary Pace led the presentation ceremonies at the tank plant before approximately 1,000 guests, including high government and military officials, industry and civic leaders, representatives of the nation's press, and employees of the Tank Plant.

The Secretary of the Army noted the appropriate naming of the Patton 48 and related it to our long-term strength, emphasizing the need to produce our weapons as cheaply as possible while maintaining quality. He pointed up the valuable lead time resulting from this production, with critical machine tools now on

hand and plant capacity ready for any emergency.

Robert T. Keller, general manager of the tank plant, K. T. Keller, chairman of the board, and L. L. Colbert, president of Chrysler Corporation, also took part in the presentation ceremonies.

### Under Critical Eyes

Witnessing the christening was a large group of Army and government officials. Among the military guests were: General J. Lawton Collins, Army Chief of Staff; Lt. Gen. John R. Hodge, Chief of the Army Field Forces; Lt. Gen. Charles L. Bolte, Deputy Chief of Staff, Plans; Lt. Gen. Maxwell D. Taylor, Deputy Chief of Staff for Administration and Operations; Lt. Gen. Willis D. Crittenberger, Commanding General, First Army; Lt. Gen. Edward H. Brooks, Commanding General, Second Army; Lt. Gen. Thomas B. Larkin, Asst. Chief of Staff, G-4, Logistics; Lt. Gen. A. C. McAuliffe, Asst. Chief of Staff G-1 Personnel; Major General E. L. Ford, Chief of Ordnance; Major General William A. Beiderlinden, Commanding Gen-

eral, Third Army; Major General Reuben Jenkins, Asst. Chief of Staff G-3.

A group of Patton 48's produced at the tank plant demonstrated their prowess over such obstacles as a 4-foot water hazard, a 3-foot vertical wall, an 8-foot trench, a "washboard" to show the superiority of the Patton 48 suspension system, a steep ditch to show the tank's performance on a sharp grade, and a zigzag maneuver course, with flags spaced 40 feet apart.

The Armor Association was well represented at the ceremonies. Present were Lt. Gen. Willis D. Crittenberger, president; Lt. Gen. Edward H. Brooks and Maj. Gen. Ernest N. Harmon, honorary vice-presidents; Maj. Gen. I. D. White, Maj. Gen. John H. Collier and Colonel Welborn G. Dolvin, Council members; and Major William G. Bell, secretary-treasurer of the Association and editor of *ARMOR*. Several other Association members were among the spectators.

In addition to Chrysler, the Fisher Body Division of General Motors Corporation and the Ford Motor



*On July 1st the U. S. Army unveiled its first completely new medium tank since World War II. The story of this long-awaited tank follows hard on the heels of the acceptance of the medium M47 for troop distribution, has added import for the mobile arm.*



# the PATTON 48

Company have been awarded contracts to build the fast, hard-hitting tank. Thus Army Ordnance has broadened its mobilization base to a total of five medium tank-building plants. Prior to letting contracts with these three companies only the Detroit Arsenal and American Locomotive Company were producing medium tanks.

The Patton 48, which mounts a 90-millimeter high velocity gun, two .50 caliber machine guns, and one .30 caliber machine gun, was christened at Newark by Mrs. George S. Patton, Jr., widow of the late general for whom the combat vehicle is named. She was accompanied by her son, Captain George S. Patton, a member of the Armor Branch.

The Patton 48 is in the 45-50-ton class. Its new design gives it a low silhouette, elliptical sides, elliptical turret, stronger and wider tracks, powerful engine, cross-drive transmission, and power steering.

The new tank carries a crew of four, one less than needed to man previous models. They include a tank commander, driver, gunner, and leader.



The Chrysler Plant and T48 assembly line, indicative of America's strength.

Chrysler





U. S. Army

#### VITAL STATISTICS ON THE PATTON 48

WEIGHT:	Between 45 and 50 tons combat loaded.
DESIGN:	Elliptical configuration of one-piece cast hull and one-piece cast turret tends to deflect enemy shells.
FIRE POWER:	90mm gun with "quick change" gun tube, 2 coaxial machine guns (cal. .50 and cal. .30), cal. .50 machine gun mounted atop turret which can be loaded, aimed and fired from inside turret without exposing crew.
POWER PACKAGE:	810 horsepower, Ordnance-Continental V-12 air-cooled engine and Allison cross-drive transmission.
RANGE FINDER:	Precision optical and mechanical system.
CREW:	Four men—tank commander, driver, gunner, and loader.
COMMUNICATIONS:	Two-way radio transmitting and receiving equipment; intra-tank phones; improved ground-to-tank phone system.
FLOTATION:	Wider tracks adapt the T48 to muddy and swampy terrain.
PRODUCERS:	Chrysler Corporation in Newark, Delaware; Fisher Body Division of General Motors Corporation in Grand Blanc, Michigan; Ford Motor Company in Livonia, Michigan.
DELIVERIES:	Sizable deliveries are expected before the end of 1952.

#### FROM FIELD TO FACTORY IN TWELVE MONTHS

The world's most modern tank plant, producing the world's most advanced medium tank, was completed in less than twelve months. Where a 240-acre tract of open field existed in January, 1951, a bustling plant, comprising more than a million square feet of floor space, was in operation when the year closed. The first pilot model Patton 48 tank was completed on December 14, 1951.

The Chrysler Delaware Tank Plant today consists of five principal buildings, as well as other facilities, including a one-mile test track, an incinerator building, gate houses, water storage tanks of 700,000 gallons and fuel and propane storage tanks.

The main manufacturing building, in which the fabricating of parts and assembly of tanks takes place, is a single story building of about 900,000 square feet of floor space—the equivalent of approximately 21 acres.

The sloping, elliptical sides of the tank make it extremely difficult for an enemy shell to get a "bite" and plough through the armor. Instead of penetrating, the shell would be more likely to glance off the sloping armor. This is the first time it has been possible for armor manufacturers to make a one-piece cast hull, and the hull-turret combination gives maximum protection for minimum weight.

The Patton 48 also carries a precision range finder which quickly calculates the distance to a target and gives the tank gunner an opportunity to fire before an enemy can calculate his position accurately. This greatly increases the possibility of the Patton 48's big gun getting a hit with the first shot.

Another new feature of the tank is a "quick change" gun tube, developed by Army Ordnance, which allows removal and replacement of a worn gun barrel in the field.

Atop the turret is an improved .50 caliber machine gun which, for the first time, can be aimed, fired, and reloaded from inside the tank without having a crew member expose himself to enemy fire.

The power plant of the Patton 48 is an improved version of the Ordnance-Continental air-cooled engine, already proved in battle in Korea. It is an 810-horsepower V-12 engine.

The wider, stronger tracks disperse the weight of the tank over a greater area and give it more flotation on soft ground or mud.

Cross drive and power steering practically eliminate driver fatigue. The big tank handles almost as easily as a new automobile.

Immediately following the official unveiling of the Patton 48 Tank at the Chrysler Delaware Tank Arsenal, Army and Chrysler Corporation officials signed the formal contract turning production at the Detroit Tank Arsenal over to Chrysler Corporation.

Chrysler Corporation built and operated the Detroit Tank Arsenal during World War II and turned out 25,000 tanks there.

On May 19, 1952, Chrysler Corporation and the Ordnance Corps of the United States Army signed a contract to work out the details of Chrysler Corporation's taking over this assignment again.





U. S. Army

Mrs. George S. Patton, Jr., speaking at the ceremony after christening the medium named in honor of Gen. Patton.



Chrysler

Shedding water like a surfacing submarine, the T48 emerges from a plunge that shows waterproof qualities.



Chrysler

Tracks tell the story—that the new tank is capable of pivoting within its own length, a key feature in maneuvering.



Chrysler

One of the tests of maneuverability is that of crossing an eight-foot trench. The T48 can negotiate some bad terrain.



U. S. Army

On a washboard the turret and gun ride smoothly, indicating the advantage to the gunner of scoring first rounds.



U. S. Army

The steamroller power of the tank is shown in the shearing of four telephone poles set in tandem—like match sticks.



# *Armor — Characteristically American Arm*

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Armor had what might now be considered a meager beginning during World War I. Then followed a rather active "childhood" until just prior to World War II, so far as development of characteristics, techniques, tactics, logistics and strategy was concerned. Here in the United States it was not until the period leading up to the last global conflict that armor really came into its own. Concepts were established. Design was initiated. Armament and armor made great strides. Tactics and strategy were tried and proven at all echelons of command by thousands of American tankers. Logistics was perfected. Armor grew in size and strength until sixteen of the ninety American divisions organized for World War II were armored.

These armored divisions knifed their way across France and Germany, providing the necessary spearhead for the ground offensive. Also in support of various elements of the ground troops were armored cavalry groups, separate tank battalions and other mechanized elements, all forged in the great American arsenal. It is interesting to note that all sixteen of the armored divisions, fully equipped, were present in Europe at the time of the cessation of hostilities there, together with fifty-one airborne or infantry divisions. Over there the mobility, fire power and shock action of armor, particularly the armored division, all of which lent flexibility to the battlefield, struck a new note in modern battle.

The term "armor" is meant to include not only the tank, but also reconnaissance units, armored infantry, armored artillery, armored engineers and the service units required to keep this potent team rolling in battle.

In ground warfare, Armor has grown to a position of importance in the great team of those combat arms which meet the enemy face to face. It would be foolhardy to believe that Armor, or any arm or weapon, for that matter, is self-sufficient. However, the mobile, armor-protected fire power of a tank which provided the World War II commander with a means of making a fast-moving, decisive blow with a minimum cost in casualties, dictates that Armor must presently continue to maintain its position of importance on the battlefield. One need only remember the bogged-down trench warfare of World War I to emphasize this point of view.

The arm of mobility, armor-protected fire power, and decisive shock action provides on the modern battlefield the means by which an Army Commander, supported by the other combat arms, can hope to achieve the ultimate objective in battle—the destruction of the enemy's will to fight. Armor brings within the commander's reach decisive objectives through its ability to move and shoot. The American type Field Army may contain a total of over 3300 tanks. It has been said that this Army could well be called an Armored Army.

In the United States we should capitalize on our industrial and technological advantages rather than depend entirely upon mass manpower. In particular should we capitalize on our predominant position in industry in the spheres of aviation, electronics, and in the automotive field which has produced for us a total of more than 52 million registered motor vehicles in the United States. We Americans, in order to take full advantage of what we have, must organize and train our military forces to make the most of these technological developments in which we lead the world. Our ability to produce the mechanical means of warfare and to employ them effectively in combat is a characteristically American asset which no nation dare discount. In this American industrial supremacy and the mechanical-mindedness of our youth lies a factor of our strength that outweighs mere mass manpower. The use of a sizable amount of armor on the battlefield is a furtherance of that basic American concept to fully utilize our technological supremacy to reduce battlefield casualties.



Since it is in this technological sphere that we stand unchallenged, it is on this level that we should be prepared to meet any potential enemy—a level where the advantages are ours—rather than on a mass manpower level. Our manpower is too precious to match a potential enemy man for man. Instead, we must strive to give our combat soldiers the very best machines and equipment that can be built, so their chances for survival on the battlefield are the best. The finger of logic thus again points to armor.

In the United States the entire concept of armor from its earliest days up through the present and into the visible future is as American as an ice cream soda or golf on Sunday. It conforms to the American principle of moving in fast, taking a chance, and getting the job done. Armor is an arm of decision—an arm of opportunity. It was so recognized in World War II.

In the aftermath of war, armor more or less dropped out of public sight. Tanks are costly and other developments took the center of the stage. Many will remember that it was only a few years ago that all sorts of super-weapons were predicted which would soon relegate the tank into the limbo of the past.

In Korea the tank once more proved its worth. And again, for the second time in a decade, the need to produce new tanks was evidenced. Once more American industry rallied to the support of the Armed Forces, and today American tanks are again coming off the assembly lines.

The new light gun tank, the T41E1, is well under way in production. This tank is being modified to incorporate recommendations made by tankers recently returned from the battlefields of Korea.

The medium gun tank has proven itself on past battlefields to be the work horse of armor. Within the last year, two medium gun tanks have started off the assembly lines, destined to take a prominent place in our long line of United States tanks. These are the M47 and M48 medium gun tanks, both weighing just under 50 tons, and mounting a 90mm gun. We have quality in both, and it is reasonable to hope that it will not be too long before they will be in the hands of the using troops in adequate numbers.

In regard to the slower, harder-hitting member of the tank family, the Army is conscious of the desirability of developing a heavy gun tank in moderate numbers. This heavy gun tank can be put into such production as may be indicated.

Today in the United States better tanks are being produced than ever before. They are better designed, they are harder-hitting, they are better powered, they are more maneuverable, and the chances for that important first-round-hit are better than ever before. These tanks—the light, medium, and heavy gun tanks—which America can produce in sufficient numbers and variety to meet any requirements, are the backbone of our armor program. That program, after a number of vicissitudes, is well under way.

The modern tank, product of research, development, and hard practical experience, promises to be with us for some time to come. Armor in strength, incorporating all the technological advances which our industrial supremacy can provide, will make a decisive contribution to victory in any major conflict in the foreseeable future.

Insofar as ground forces are concerned, Armor, properly supported, is today one of the most decisive combat arms the battlefield has ever known. The leadership of this characteristically American arm has got to be good. There can be no dead hand at the throttle.



# 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.

*Combined arms teamwork is the key to success in ground warfare. This has been proven on the battlefield in Korea, to which **ARMOR** turns once again for a firsthand look at one segment of the ground team. The spotlight is on the artillery as battalion and battery commanders of an armored artillery unit discuss **MOBILE ARTILLERY IN THE TEAM**.*

*The writer of the following served with the 5th Infantry Division Artillery in World War II. He has been in Korea for the past 22 months and has served with the 3rd Infantry Division and U.S. I Corps. For the past five months he has commanded the 92nd Armored Field Artillery Battalion.*

The battalion which I presently command has been in action in Korea since September, 1950. It was committed to Korea with elements of the 7th Infantry Division in the Inchon landing. It later took part in the landings with U.S. X Corps in north-east Korea. The unit was withdrawn with that force and later assigned to I Corps for a brief period, after which it was assigned to IX Corps where it is currently in general support of a front-line division.

During the 21 months this unit has been in Korea, it has supported practically every UN division. This has been accomplished because we are able to move rapidly—shoot from roadside positions—and communicate over long distances by means of organic radio.

Tactical mobility is paramount in support of any rapidly moving situation. This battalion has provided fire power and shock action in support of nearly every type of offensive operation and has also been quite useful as a "fanny fender" in support of rear-guard action. The battalion, on occasion, has been called upon to act as a fire brigade, dashing from one division to another along the corps front, providing covering fires

during the relief of other artillery units.

Events have proved that SP artillery has more tactical mobility than any equivalent towed artillery unit in that we can move off the road and have the first round off in less than five minutes; and go from firing to march column in less than ten minutes. On several occasions we have been unable to reach enemy artillery and mortar positions which were harassing our front-line troops. In these cases, we displaced two sections laterally and forward and were able to bring effective fire from a different quarter, destroying the enemy positions.

The technique of employment of self-propelled artillery follows the same pattern taught at the Artillery School; however, each situation determines the tactics. Emphasis is placed on prior planning and coordinating with supported units.

During the present static situation

in Korea, alternate positions are the rule rather than the exception. Each battery has one or more alternate positions and fires from these at least twice weekly. This not only tends to confuse the enemy as to our strength and location, but also gives the armored artillerymen continuous training.

The morale of these armored artillerymen is sky-high. We have no problems. The men are cocky, love their gun and enjoy working with the tanks. There appears to be that same spirit so prevalent in the Armored Force—that of a fast-moving, hard-hitting outfit with a terrific wallop.

In response to the enemy's sneak tactics, the armored battalion's perimeter must literally be a ring of steel. With the absence of counterbattery fire and aided by air superiority, the ideal battalion perimeter becomes an impregnable line of defense. In this case, the armored artillery battalion can maneuver its 18 guns and fight as tanks in the final defense of the perimeter. With its 35 armored personnel carriers, fifty .50 cal. machine guns, forty .30 cal. guns, thirty-five 3.5 rockets and hundreds of submachine guns and carbines, the SP battalion is "hell on wheels."

There is no doubt that SP artillery is the "artillery of the future." This much has been revealed in Korea, where in repeated instances, towed units have become immobilized and overrun whereas armored units have for the most part, fought off repeated attacks and successfully withdrawn from fire when necessary.

Lt. Col. Edward K. CLEVELAND



Lt. Col. Cleveland

U.S. Army



*The writer of the following served in the Pacific during World War II with the 98th Infantry Division. He returned to active duty in January, 1951 with the 31st "Dixie" Division. In Korea since September 1951, he has commanded Battery "C" of the 92nd Armored Field Artillery for the past seven months.*

In the never-ending search to find the best and most practical weapons and equipment with which to wage a successful war or campaign, I believe it well worthwhile to consider the important role that armored artillery has played in Korea.

First, let us look at an armored artillery battery and see just how it is put together and what makes it tick.

In the firing battery we have six self-propelled 155mm howitzers capable of doing anything that a towed 155mm can do, except high-angle firing. We have in one compact unit—howitzer and motor carriage combined—a weapon of medium caliber capable of operating at high speed over rugged terrain; of firing either direct or indirect fire; of supporting rapidly moving armored vehicles or the slower moving infantry; and in company with other units of the battery, of defending the battery from either ground or air attack without help from outside sources.

Can a towed artillery battery do these things and at the same time continue to carry out its primary mission? In my opinion it cannot.

Missions of the armored artillery units in Korea have been many. No task have they found too great and

at no time, as far as I know, have they failed.

Climbing steep mountain trails to positions from which they place direct fire upon enemy bunkers, emplacements and communications; or accompanying rapidly moving task forces, whether in pursuit or on a raid, are not unusual for armored artillery units in Korea.

Making rapid displacements from one sector of the front to another for the purpose of covering while other units are being replaced on the line has been a common occurrence. The fact that an armored battery can move into position and start firing almost immediately and then move out from that position just as rapidly, has made it an ideal unit to move forward, from which direct, indirect or assault fire can be used more effectively. A 155mm self-propelled battery can move into position and place direct fire on a target in less than two minutes. A like unit can move into position and start delivering indirect fire within five minutes.

The question is usually brought up as to the width of traverse of the 155mm SP. Here in Korea we have more or less forgotten there was ever anything said about the approximate 600 mils of traverse on the SP. We know now that there is for the SP 6400 mils of traverse that may be obtained in less time than it takes to say, "Armored artillery has proven itself in Korea."

Let me describe here a typical displacement of a 155mm armored battery that might have taken place at any time since the first armored units arrived in Korea. The battery commander receives the word to "March-Order" to a new position previously designated and moves out with his party of five vehicles including two jeeps, one ¾-ton truck and two half-tracks. Fifteen minutes later the BC receives a call from the Battery Exec that the battery is ready to move; that is, it is loaded with basic load of ammo and ready to pull out of position. When the battery commander is ready for the battery to proceed he gives the word and the battery moves out following the Exec.

Half-tracks are distributed throughout the firing battery and machine guns are manned. The BC enters the new position and posts initial

security with the two half-tracks and part of the detail personnel who accompanied him in the advance party. By the time the battery arrives, the area is secure enough to allow the battery to enter and within five minutes thereafter the battery is ready to start a registration of a "will adjust" mission. Upon entering the position, each half-track drops its ammo trailer at the howitzer and proceeds immediately to its position on the perimeter.

Do you, the reader, think that a towed battery can compare with this?

CAPT. J. T. RALEY

. . .

*The writer of the following fought with the 104th Infantry Division throughout its campaign in Europe, in World War II. Recalled to active duty in June, 1951, he served with the 91st AFA at Fort Hood. He has commanded "A" Battery of the 92nd Armored Field Artillery Battalion since April, 1952.*

Do you like to shoot hard and move fast? Combine the mobility and speed of armor, throw in the accuracy and shock of artillery, and you CAN hit hard and move fast. That is armored artillery in a nutshell.

The biggest attraction of self-propelled artillery is speed—not only on the road, but in the firing position. This makes our terrific fire power available anywhere—any time. While en route to another position,



Capt. Raley

U.S. Army



Capt. Plummer

U.S. Army



for instance, we can receive a fire mission and within five minutes, the tanks are off the road and "blasting" away at the enemy.

When the 92nd AFA Battalion with which I am currently serving was shipped to this theater shortly after the outbreak of hostilities, there arose a great deal of skepticism of its capabilities in the rugged type terrain that Korea offered. Skepticism soon turned to amazement as we proved, just as the tankers did, that we *could* operate in this mountainous terrain.

We have been called upon to do many things. On several occasions, SPs have been driven right to the MLR and fired in direct support of infantry, knocking out enemy bunkers and emplacements. This little detail has been referred to by armored artillerymen in Korea as "bunker busting."

To give you an example of our maneuverability, I will relate an incident that occurred recently when we covered a towed unit that was preparing to move out. Before I went up, I received a call from Battalion S-3 giving me three numbers—1500, 6200 and 1800. All that meant was the base piece moved out at 1500 hours, we were able to lay on compass 6200, and the rest of the battery was to move out at 1800 hours. The move covered some five miles. We had our base piece in position and reported "ready to fire" at 1525 hours. By 2000 hours the battery was in position, perimeter defense established, bunkers were dug and tents erected, hot coffee and doughnuts had been served to the troops and we were in the process of firing harassing and interdiction missions.

As soon as we got our base piece in position, the towed artillery unit moved out. There was very little time lost in this operation and we were able to successfully cover their displacement. While coffee was being served, a sergeant of the towed outfit walked up and thanked us for the coffee and said: "In the time you took to accomplish all of this, we would just normally be getting our guns out of position."

Among artillerymen who have not yet obtained this "self-propelled state of mind" there exists the question of high-angle fire. To many it seems that this is one disadvantage of self-propelled artillery. It is true that we

can't elevate our tubes as high as towed pieces, but we can elevate our tanks, merely by placing them on a slope or small incline.

For my part, I'll take SP artillery every time.

CAPT. FREDERICK A. PLUMMER

. . .

*The writer of the following served as forward observer and recon officer in the Pacific during World War II, on Guadalcanal, New Guinea and in the Philippines. Called back into active service in March, 1951, he has commanded "B" Battery of the 92nd Armored Field Artillery for the past five months.*

I have served with horse-drawn, mule pack, 105mm truck-drawn, and



Capt. Smith

U.S. Army

155mm tractor-drawn artillery, and I am now commanding a battery of armored self-propelled 155mm Howitzers. I am prejudiced to the armored artillery.

In my opinion, the armored artillery piece has many advantages over the towed artillery piece. For one thing the armored is more mobile. To "march order," you simply crank up the tank, drive out and raise the trail spade. It is not necessary to wait for a prime mover to be driven up from the motor park, or to lower the piece from the firing-jack, or dig-out trail spades that have been frozen into the ground, as quite frequently happens in a Korean winter. Mov-

ing into position is also a simple matter. Just drop the spade and back up. If the ground is too solid to force the spade in by backing up, the first round will seat it securely.

Going into position and preparing to fire rapidly is further expedited by the electrical elevating mechanism. This device is also a great help in ramming. The tube can be lowered to a convenient ramming position very rapidly and raised again with the same speed by a "flick of the wrist."

The towed artillery has one advantage. It is more suitable for high-angle fire than the armored. But this has been no disadvantage to our armored pieces in Korea, for we have been quite capable of accomplishing our missions without high-angle fire.

In the rugged, mountainous terrain that is general to Korea, our armored artillery units have traversed treacherous mountain passes on ice-covered roads at night without mishap. I know of one tractor-drawn unit that lost five vehicles in daylight on the same pass we crossed under the same icy conditions in the dark of night.

With our tanks, we are able to cross terrain that is impossible with truck-drawn artillery.

The .50 cal. and .30 cal. guns within an armored battery make us a "tough nut to crack," whether on the road or in firing position.

As for maintenance problems in an armored artillery unit, we run into practically the same problems that confront the tankers. Our maintenance problems are fewer than those of a towed outfit because of our smaller number of vehicles. To date, we have never had to evacuate a tank beyond the service battery. The battalion initially shipped overseas with twelve 155s and some six months later received an additional six guns as replacements. Actually, we did not need them because our "old" 155s were still pounding away.

In my opinion, the 155mm armored artillery battalion could very efficiently replace the light battalions of a division, and heavier self-propelled artillery could replace the drawn medium battalions. The armored artillery piece is a marvelous and versatile machine.

CAPT. LLOYD E. SMITH, JR.

ARMOR—July-August, 1952





Photos by Woltz Studio

# Armor's New Forge for Leaders

by **LIEUTENANT COLONEL ROBERT B. RIGG**

*"I learned more in the six hours out on the course  
than I have learned in six weeks of basic training."*

**T**HERE is something disturbing about a flaming tank hull even if you are not inside of it. Private V. L. Bowen had seen those smoking M-4 hulls and burning half-tracks on Hill 730; he had later eased his tank through a double row of dragon teeth upon which hung two other flaming tanks. His nostrils caught the acrid smell of burning rubber and oil as his eyes also re-

viewed the twisted human forms, the PW's with upraised hands and concealed grenades, the logs and land mines of a road block, and lastly, the shell of a burning village with its pall of dark smoke. The explosions were over, but Private Bowen\* was filled with some vivid memories when on 18 April 1952 he wrote "The field problem was good. But the problem came too quick, if that happened in combat like that a tank crew would all crack up, or else get killed."

In all of his sixteen weeks of basic

\*The actual name of the soldier is a matter of official record, but he is given a pseudonym here.

training Private Bowen and his 54 fellow soldiers had never faced such realism as they did in the new Tank Leader's Reaction Test Course constructed and put into operation at the 23d Armored Engineer Battalion, 3d Armored Division, Ft. Knox, Kentucky, in April 1952. Nine men failed this combat course on its opening day, but others had these remarks to make:

"Tank Reaction Test. Wow! What a nightmare! I think it is the next thing to combat!"

"This definitely instilled confidence and a sense of responsibility in each man."

**LIEUTENANT COLONEL ROBERT B. RIGG** has commanded the 2nd Armored Engineer Battalion (carrying unit for the Leader's Course) since January. He is author of *Red China's Fighting Hordes* and a frequent contributor to this magazine.



"I think that the tank reaction course was the best for gaining self-confidence. That is really the only chance I had to make decisions of my own . . ."

"I consider myself better prepared to enter combat than I did five weeks ago . . . the Tank Reaction Trail has helped me learn most of what I do know . . ."

Another Leaders' Course student said, "I think that you can just picture yourself in combat and you know that you will have to make a decision on your own and in a hurry, and it showed different situations that would require you to make them."

At Armor's only Leaders' Course the officers and men have built a battlefield complete with a fortified zone, shot-up tanks, dummies of the dead, and a sad little village, part of which is smashed up and burned each week as they thrust 60 to 90 future tank leaders into its explosive maw where the raw TNT is anything but spared! This course is purposely rough and designedly tough.

Few men enjoy this course, but the great majority admit benefit from its lessons. It is primarily a "test under stress," a competitive test of leadership. All of the men's scores go on record in Washington, D. C.

Here is what happens. A tank crew is given a field order which tells the crew that it mans the lead tank of the leading tank section in an advance guard. The mission is clearly one of "Go." The course has twelve situations on it designed to *stop* or *delay* the tank. The crew mounts the tank which "buttons up" and leaves the LD. Climbing up a small hill the tank passes a convoy of burning, destroyed vehicles. Here is a solemn warning to the tank commander! He should heed it; for the split second his tank lurches over the hillcrest, an enemy tank (500 yards distant) lets go with a blast of gunfire. The commander of the tank crew under test sees the flash, and before he can finish his own fire order he is rocked by a nearby explosion (of TNT). Both tanks fire blanks from the main gun and MGs, but controlled explosive charges simulate the landing of shells. In this tank versus tank engagement (as in the other eleven situations) the tank commander is numerically graded on his:

1. Estimate of the situation

2. Speed of decision
3. Fire command
4. Adherence to mission
5. Reporting to higher HQ
6. Tactical security
7. Aggressiveness.

The limited state of training (total: 20 weeks) of these selected (leadership) men under test, prevents the use of live ammunition on this course. But the tank commander has no rest and little is left to his imagination. He is soon faced with a dirty foreign civilian (politics unspecified) who offers to surrender some Aggressor soldiers. Again a quick decision must be made because a dozen up-handed PWs straggle forth from a forest. There are several approved solutions here, but shooting them is not one. However, the tank leader must reckon with each situation in terms of his mission. Here he must not be delayed by the PWs; yet at the same time he must watch his security and not permit the PWs to muscle in too close to his tank. A grenade in a hatch gets a low mark for the careless tank commander!

#### Trouble at Smith-Skaya!

The tank moves on. Trouble is just starting. "Which way to Smith-Skaya?" A confusing road intersection and a broken directional sign loom up. Several common sense decisions can be made here after which the tank is free to move ahead. The tank is on its way again but this time it is low on ammo. The commander knows his men could stand a little chow. An abandoned supply dump gives promise—but care and sound judgment are needed in this situation. There are some Oriental tricks planted here. The careless can become "casualties," and an erring tank commander can lose his grasp on leadership by a foolish decision on this situation. The dump is booby trapped!

Giant logs. Road block, and what else? "Search the area by fire!" A few "hostiles" give way, but there is always another obstacle. This time, land mines. "Blast 'em with the main gun!" Induced detonation. The more deliberate tank commanders order a crew member out to clear a path through the minefield. A marker is quickly placed on the mines and a radio report is made. The advance guard moves on with confidence.

This last static obstacle should warn that life ahead can be deadly. The next trap trips those who cannot watch the flanks, for an Aggressor tank ranges to one flank of the course. About 70 percent of the leadership students under test miss this one, and the Red tank catches them square in the rear. In combat a tank so spotted and shot would be a funeral pyre, and we bring such lessons home in the critique. Here the surprised tank commander twists in the turret to rotate it almost 3200 mils. If the crew is fast enough it will get off one shot before the hostile tank ducks into defilade. On each test tank there is always an officer or NCO grader whose one job is to observe the action and grade the tank commander on a check list.

A few hundred yards later a new panorama unveils itself: it is when the tank commander catches a glimpse of the snaggle-toothed pillbox fortified area, that he feels there is a bit too much thrown at him. Here some of the men tend mentally to give up, and it is necessary to do a bit of forceful driving. Actually the tank is halted in hull or hill defilade; the commander is apprised of a new situation, and he is given this fresh mission by the grader:

"Your advance is momentarily halted by the fortified area before you. This has been reconnoitered by infantry and engineers and you have shared in this reconnaissance, the results of which are on this sketch map."

At this point the tank commander studies the situation which lies before him. He is designated the commander of a small *assault team*: one actual tank section, an infantry squad and an engineer section. Both the machine and human elements of this team are physically present. He needs no imagination to visualize the hostile situation before him.

"You are *one of several* assault teams in this sector. Your objective is that hill straight ahead. Give your orders and instructions, then go into action!"

The infantry and engineer commanders receive their orders and move forward. We have not loaded this problem with the complexities of technique and tactics. Sometimes the leaders under test mutter and fumble amid indecision, but the officer in-



structor (grader) puts an assault team *plan* into action so that the students will *learn*, even if they fail to solve the situation. The test emphasis is always on speed of decision, adherence to mission, estimate of the situation, aggressiveness, and so on, not on the soldier's knowledge of tactics. Smoke grenades simulating WP shells blanket the enemy pillboxes. Friendly infantry and the engineers advance; the tank section fires from hull defilade. The dragon teeth are breached in one spot by the engineers. The infantrymen advance further. Then one tank, supported by the other as a base of fire, advances into the attack. If nothing else, the tank crew under test has participated in a combat demonstration.

The day's sweat is not over for the students until the village of *Smith-Skaya* is taken under fire and assaulted. *Smith-Skaya* is the grim little torn-up place which we build up in order to burn down. The "local citizens" did not like their Red mayor so he hangs from a crosstree, but Aggressors scramble about the town's torn innards to make life unpleasant and noisy for those who would choose to enter. *Smith-Skaya* is real in a shell-like sort of way, with a barber shop but no barbers, a looted drug store, and laundry still fluttering on the clotheslines.

The tankers under test join up with some friendly infantrymen just before they crest a hill to view the pleasant little panorama of a small lake reflecting the smoking ruins of this town. The tank commander has this infantry under his control; he has resumed his original mission of advance guard and here he must clear his way through the village. This situation is simply designed to give him passing acquaintance with town targets and a brush with street fighting.

In the approach to *Smith-Skaya* the standard mistake occurs every week, for some embryo tankers never seem to learn that hull defilade is the pleasant pose in which to pause before an objective of strength unknown. From the hill the wise tank commanders heave a few shots into the higher town structures and then send the infantry ahead to scout the village out. However, some student leaders have to be told to get their tanks off the skyline while the infantrymen measure the town's temper. Here again



The tank leader's decision is put into effect as infantrymen cover engineers preparing to blast a path through dragon teeth in the fortified enemy position.

the lessons are not all in the critique, for when a tank wants to play sitting duck there is a healthy charge of TNT nearby to remind careless tank commanders that sky-lining a hill is for trees. They usually back up after one "shell" lands, and they are not too politely told that white crosses can be fine monuments to poor leadership, stupid decisions and carelessness.

When the infantry waves the tankers into the town the armor men sometimes assume that the day's work is done. However, at the entrance to the village the infantry habitually "freeze" in place and won't move unless the tank commander urges it forward. Here is one of the many points the tank leader is graded on. He must also specify the proper ammunition in relation to various targets. Range estimation must not be too far off. Does he "fight his crew"? These points the grader checks off amid the ensuing fire fights where the Aggressors scream, yell, fire and fall back.

Captain Thomas Pardue, in direct charge of the course, is a stickler for realism and he makes his Aggressors carry out their roles to the extent of "dying" with groans. Master Sergeant Charles L. Bullock, "Commandant of the Enemy" at *Smith-Skaya*, gives his Aggressors no rest between tanks for after each armored vehicle smashes through a hull-high barricade he and his men erect a new one out of ammunition boxes in about seven min-

utes. Then Sergeant Bullock and his "hostiles" mount the buildings and point their rifles and MGs out of the windows for the next tank. Two men throw a few more timbers into the fire of the stone house which is maintained in a permanent state of "burning down." These are small touches, but they add up to a combined effect of war grimness and combat ruin.

Just how are the students faring on this test? A day never passes without at least one tank bypassing the road block and exploding the not too well hidden mines near it. One tank crewman said he went through several situations without hearing the commander's orders, then he discovered he had forgotten to plug in his headset. "Some men get scared, but they put forth a strong effort," said PFC Di Venceze when he completed the course. A Korean veteran, Sergeant Joyce says, "The course often exceeds combat experience. In combat you would only run into part of the many situations in a short time whereas (here) you are confronted with a large number. . . ." "It is confusing" says Private Parker. So is combat, we say!

"This course gives every man the 'baptism of fire' feeling," remarked Sergeant First Class Ralph F. Kreps, one of the instructors. "Some men show nervousness and some, when faced with rapidly changing situa-



tions, freeze." An example of the nervousness was evidenced when one tank "cut down" its own dismounted bow gunner who was investigating an abandoned Korean bunker.

At the conclusion of the run over the Reaction Test Course a thorough critique is conducted in front of a giant map board which outlines the following situations the tank faced:

Crashed Aggressor airplane  
A hostile tank  
Enemy civilian and prisoners  
Broken road sign (or bridge)  
Enemy supply dump  
Friendly tank in need of help  
Road block and mine field  
Enemy tank and infantry  
Abandoned Korean bunker (CP)  
Fortified area  
Defended village  
Defended street corner.

Lieutenants Dennis H. Hunter and Donald E. Hansen alternate in the conduct of this critique while the grader who rode the tank adds his points at the end. Each student meets three situations as a tank commander

and then faces nine other situations as a crewman. The ideal would be to have each soldier act as a tank commander for twelve situations but this is too costly and impractical. Each man does encounter a situation wherein, as tank commander, he takes the enemy under fire. The tanks leave the starting point on a prescribed schedule, 15 minutes apart. Six tanks run the course all day long with a 15 minute halt at the end of each run for maintenance check and cleaning of the gun. Following this the men are given four practical tests on crew drill, maintenance, bore sighting and communications by Sergeants James H. Hines and Ralph F. Kreps. There are 60 points to be achieved on these concurrent tests while the Reaction Test course presents a possible of 140 points, for a total of 200 in all.

This battlefield is open for business to students in their fourth week of leadership training and these men are tested as they run the course in tanks. In the fifth week the same class mans

the course as friendly infantry and Aggressors, thus securing added training and also seeing the mistakes of a new class of tankers.

*The Scoring System is Specific.* Each NCO or officer grader who rides a test tank scores the tank commander by a check sheet designed to insure uniform grading. For example, on the first tank versus tank engagement the grader checks off the commander's action under seven general headings (see chart on this page).

The above example shows that the tank leader came close to "maxing" this one situation. However, under FIRE COMMAND we note that the leader estimated his range incorrectly so he lost four points. Under REPORT he did report *something* on his situation to higher HQ gaining four points but he was not specific as to *what, when, where*, so he lost three points. Within SECURITY, he fired both shots from the same position so he dropped another four points. The failure to get off a shot within 40 seconds cost three points under MISSION. (This is an exceedingly generous allotment of time but only about 35 percent of the crews make it within 40 seconds, reflecting well the urgent need for more practical work and crew training.)

The graders of the students earn their pay for they spend the day clutching the turrets of lurching tanks and marking the score sheets amid the smoke and smack of "battle." They are experienced men like Sergeant Earl D. Martin, for example, who is a tank combat veteran of both World War II and the Korean Conflict.

Appropriate prizes for the winning tank commander, and the tank crew, are awarded at the class graduation ceremony. The highest score to date has been 180 out of a possible 200. The scores average 134 points. All scores are recorded on the Department of the Army's AGO PRT-847 form, but as this standard form is designed for *infantry* leadership tests some modifications and changes have been made in it. Brig. Gen. Raymond E. S. Williamson, CG of the 3d Armored Division, has made recommendations to the Department of the Army to have this form altered to fit Armor. The matter is now under study in Washington.

Armor's Leadership Course operates

1. DECISION: Did he decide? X (7)\* Quickly — (4) Slowly — (2) Very Slowly
2. ESTIMATE: Was his tank prepared to meet the enemy on the hill? X (7) Yes — (0) No
3. FIRE COMMAND: Was His:
  - Ammo correct (shot) X (4) Yes — (0) No
  - Range reasonable — (4) Yes X (0) No
  - Adjustment correct? X (6) Yes — (0) No
4. MISSION: Was he intent on destruction of enemy?
  - X (4) — (0) No
  - Did he get off first shot within 40 seconds of being fired on? 0 (3) Yes X (0) No
5. REPORT: Did he make a report? X (4) Yes — (0) No
  - (1) What — (1) When — (1) Where
6. SECURITY: Did he:
  - Try to fire when moving? X (3) Yes — (0) No
  - Order tank into new position for the second shot? — (4) Yes X (0) No
7. AGGRESSIVENESS: Did he "fight" his crew X (5) Yes — (0) No
  - Did he order his driver to do anything? X (2) Yes — (0) No

ACTUAL SCORE 42

(POSSIBLE SCORE 56)

\*Number in parenthesis equals score for each point or question.





A tank smashes into the enemy village of Smith-Skaya, where the tank commander must engage a variety of targets, select ammo and control infantry.

under an Army Training Program that prescribes the subjects and hours of training within the five weeks of instruction. This program is well laid out but it is still too academic in actual application. The author has taken up this matter with Lt. Colonel Gordon E. Murch, his successor, who is endeavoring to implement the program in terms of more field work. The main limitation to date is not the ATP itself, but the lack of tanks, armored reconnaissance vehicles, and related NCO crewman fully trained to teach.

### Salvage Does It

*Operation Scavenger Built the Course:* "If it isn't nailed down, or in the CG's yard, then use it!" This was the motto that launched the construction of the tank Reaction Test Course from salvage materials. By a vigorous and mighty search of the post area and particularly the salvage yard, Leaders' Course men turned up about 35 tons of odd material ranging from scrap lumber to fire plugs. After Sergeant Bullock and his men carried away stone by stone the foundation of an ancient and abandoned farmhouse on the reservation, the word went around Fort Knox to "count the build-ings each day." Except for the nails, the entire combat course was constructed from salvage materials at a saving of thousands of taxpayer dollars. It has been estimated that the combat course would have cost up to

\$17,000.00 if new materials and civilian contract labor had been employed.

Lieutenant John C. Smith turned architect, engineer and builder to manage the construction of the course on the principle that "Never has so much been built with so little."

### Cost Consciousness

His raids on the Post salvage yard were early morning forays designed to beat the usual shopping crowd which plumbed the depths of scrap lumber, cracked commodes, rotten rubber, and twisted iron. One day Lieutenant Charles E. Campbell unloaded a wrecked airplane in the battalion area after the writer specified he wanted a crashed MIG on the course. Two days later G-4 representatives in hot pursuit of the wrecked plane visited the battalion and sought to "fly away" the carcass, saying it was to be sold for scrap. Lieutenant Robert D. Wilcox, the battalion supply officer, never one to be outdone on matters administrative and legal, cracked the regulations and came up with the saving quote that the "material in question was still Government usable." The red tape artists are still trying to unsnarl the argument while the airplane with its converted tail assembly does well for a crashed and burning MIG. This plane has bred another problem: twice, passers-by have reported the display as an actual crash on the reservation.

In the fortified area the dragon teeth are made of wood and painted white. The pillboxes are constructed out of sheets of corrugated metal wrapped around posts driven in the ground. Logs and metal sheets are placed on top to roof the defensive shelters. An exact replica of a log-type Korean bunker is elsewhere on the course and every week this installation is searched by fire. Some 23 dummies of enemy dead were made out of Class X clothing, the guts of these "situations" being old newspapers, memos, obsolete bulletins and such paper work. More Aggressor dummies will be made as soon as more circulars, etc., become obsolete! Some of these dummies are so realistic that Sergeant Bullock found himself yelling at one of the inert figures to "get up and get moving." Bullock has been kidded ever since as to why he didn't prefer court-martial charges.

The local scrap metal drive came in competition with our quest for old tank hulls. However, Brig. Gen. John T. Cole, Assistant Division Commander, and Lt. Col. Marshal B. Allen, the G-4, came to the defense of our mission and we secured a variety of old tank hulls and halftracks for the course where we now retain a good many tons of metal in "strategic reserve," while using it for training realism besides.

### Summary

The words of the men who have been trained on this Reaction Test Course are evidence of the fact that we cannot give our soldiers too much practical field training. These new American soldiers are hungry for more field practice with the tools of their trade. They earnestly desire more *practical* training, especially within their basic training. It is my studied conviction that the present ATP for Armor basic training involves too many classroom hours and many subjects too distant from the missions of *shoot* and *fight*. This matter of ATP balance is now under study by Colonel Raymond W. Curtis, Chief of Staff of the 3d Armored Division.

Only by putting our soldiers through realistic training, with actual reconstructions of battlefields loaded with explosives, smoke, ruins, etc., can we properly condition them and eliminate some of their fears of the combat that may be ahead.



# Development of Joint Operations Plans

by COLONEL WILLIAM H. GREER

**T**HERE was a time not long ago when joint planning got only lip service. That time was as recent as Pearl Harbor. During World War II and the period following, great strides have been made to correct this condition. Training officers in the techniques of planning for Joint Operations has become a major effort in the Armed Services. Among the foremost in this effort is the Armed Forces Staff College, where techniques in the development of joint plans are stressed.

Planning for operations involving joint forces is not different from planning for other military action, such as that for an armored force, except for the consideration of a vastly greater variety and number of units and the voluminous detail involved. The sequence of procedure is the same. The members of planning staffs will usually have to take diverse courses in forming the plan and in assembling the data for it. It is about these diverse courses that this article is written. It should be kept in mind that a plan for an operation, whether joint or unilateral, is the blueprint for the action during the operation. It is made for the operational commanders.

The steps in the development of a Joint Operations Plan are discussed in a logical sequence in the paragraphs that follow. It is hoped that the reader will note this sequence and will realize its application to any military planning. Only the highlights of planning are discussed; the detail is left to the imagination as it is too voluminous for purposes of this discussion.

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Usually, members of a planning staff are familiar with the situation prior to the beginning of planning. Such a condition is desirable. However, many plans are developed, and satisfactorily so, by staffs hastily thrown together. In any event, the Commander's Estimate of the Situation, in the preparation of which he is assisted by his staff, and his decision are prerequisites to the planning. The plan follows as the link between the decision and the action. In the plan appears the word picture of what is to be done and who compose the main forces.

For the sake of uniformity, the familiar five paragraph form is used. This form, shown below, is universal in the Services and is the document from which the subordinate commanders, regardless of service, obtain their instructions. Consequently, the first objective of planning staff members is to make the joint plan a completely usable document.

The plan must be simple and un-

derstandable. It must be concise but complete. It should contain a word picture of the operation as viewed by the Joint Force Commander. In keeping with the requirement of conciseness and completeness, the plan proper must highlight the intended operation, leaving the myriad of details to be carefully arranged in attached annexes.

The sequence of subjects in the Form for the Plan does not depict the sequence of their development. A chart of Steps in Preparation of the Plan indicates an arrangement of topics depicting a logical sequence of steps and procedures. In the right column are listed the paragraphs in the form wherein are placed the data developed by procedures listed in the left column. This depicts that which is known as the "spadework" in the development of the plan. The steps mentioned and many others must be carefully examined and executed.

It must be remembered that several of the steps indicated usually

## FORM FOR THE PLAN

### Heading

### Body

#### Task Organization

1. General Situation:
  - a. Enemy Forces:
  - b. Friendly Forces:
  - c. Assumptions:
2. Mission:
3. Tasks for Subordinate Units:
4. Administrative and Logistical Matters:
5. Command and Signal Matters:

### Annexes:

### Signature

### Distribution:



## STEPS IN PREPARATION OF THE PLAN

1. Understand Mission
2. Develop Assumptions
3. Determine Operations for Subordinate Elements (Component Operations)
4. Determine Tasks To Be Performed by Subordinate Elements to Accomplish Operations
5. Organize Forces into Task Organization
6. Assign Tasks to Subordinate Elements
7. Solve Command and Control Problems
8. Compile Information and Complete Form
9. Complete Supporting Documents and Assemble

## PLACE IN OPERATION PLAN FORM

- Paragraph 2  
Paragraph 1 c  
.....  
.....  
Task Organization  
Paragraphs 3 and 4  
Paragraph 5  
Paragraphs 1 a and 1 b  
Relate to Paragraphs of the Plan

proceed simultaneously, at least in part. The steps will be discussed in the order in which they appear above.

Before work can proceed very far in the development of the Plan, there must be a clear statement of the mission and a complete understanding of it (Step 1). The mission of a Joint Force is "a concise declaration or announcement of action to be taken during the course of the operation by the overall command." It includes the purpose. The missions of subordinate commanders spring from this mission and are found in Paragraph 3 of the Plan.

Upon occasion, the commander of the Joint Force must deduce his mission from his knowledge of his superior's general plan and from the situation. However, the mission is usually given by higher authority. It is the guiding light throughout both the planning and the operational phases of the operation. It is constant and can have but *one* interpretation. Each element of a joint command has for itself a mission subordinate but related to the overall mission of the Joint Force, and its accomplishment goes toward the accomplishment of that overall mission.

Because plans for joint operations are usually designed for use at a distant date in the future, it is essential that members of the planning staffs visualize these future conditions and plan accordingly. Many essential facts will not be known. The solution to vital problems which cannot be based on fact must often be based on assumptions (Step 2). But just what is an assumption? It can be said to denote a condition or a situation which is expected to exist or to develop during the time of the operation.

Assumptions are not guesses or conjectures; they are statements of situations visualized as a result of knowledge of certain facts and conditions that must exist in order that the plan will be workable. For the proper determination of assumptions, the best in judgment and experience is required.

After statements of assumptions are firm, they are considered statements of fact for planning purposes. New situations, not visualized in original assumptions, may require new estimates; new estimates may require changes in the decision. A change in decision, of necessity, causes changes in the plan (and, incidentally, added labor for the planner). It is evident, therefore, that the assumptions must be based on firm ground. Assumptions restrict a plan and limit the field of action. They should be few in number, they should be worded to describe conditions that are expected to exist, and, of course, they must be accurate.

Once the mission and the assumptions are clearly stated, then the planning proper can get under way.

Early in the planning stage, the commander, assisted by his planning staff, draws his concept of the operation that is to follow. This concept is a brief, concise summary of how the commander visualizes the operation. It is based on facts and on conditions expected to obtain at the time of the operation. It is invaluable to staffs and to subordinate commanders in that it assists in crystallizing the ideas of how the operation is expected to develop and progress. The concept is formally written only at the top levels of command and then only when the complexity of the operation

requires extensive coordinating action on the part of several echelons of command. Otherwise, it is usually informally prepared. Whether formal or informal, the concept is always considered by a staff and is used by a commander as a basis for briefing his staff and his subordinate commanders. It may be said to be a kind of outline for the plan. Of course, it must be sound from a logistical point of view as well as from that concerning communications.

The concept usually contains statements delineating:

- a. The mission.
- b. Designation of major units of the force.
- c. The mounting points of major units.
- d. Phases of preliminary operations.
- e. The supporting operations.
- f. The scheme of attack.
- g. The extent of tactical exploitation.
- h. The development of the objective.
- i. Coordination with other major commands.
- j. Command relationships.

All members of the planning staff should become familiar with the concept at the earliest possible date.

Even though the plan fixes the activities of elements of the force, it must provide and permit flexibility of action. A plan without elasticity to provide for unseen situations is like a ship with a fixed rudder. In the plans for and the instructions to the subordinate commanders, as much leeway as possible is permitted for them to apply their own methods.

Step 3 concerns the determination of operations for subordinate elements.





Joint operations involve air, sea . . .

U. S. Navy

ments. These are sometimes called component operations or, as the word indicates, parts of the whole operation. Each of these operations is conducted by an element or elements of the overall command and the successful accomplishment of each supports the successful accomplishment of the entire operation. It might be well to cite an example: In an amphibious operation, each subordinate element performs specifically defined tasks or component operations. Some of these tasks may be listed as follows:

- a. Procurement of the required intelligence, *i.e.*, the E.E.I.
- b. Movement and deployment of the forces.
- c. The protection of our own forces.
- d. Interdiction of hostile interference.
- e. The isolation of the objective area.
- f. The gaining of the objective.
- g. The provision for logistical support.

There may be, and usually are, a number of others.

Each of these component operations must be carefully analyzed as to its true implication regarding necessary forces to accomplish the operation, the time to accomplish it, and the best timing (Step 4).

If the task under a. above, procurement of intelligence, be used as an example, the analysis discloses the required tasks, some of which follow:

- a. The gathering of information about the water over which the amphibious force will move in approaching the objective.

- b. The examination of water lying off the beaches as to whether or not it is mined or contains underwater obstacles.
- c. The determination of condition of beaches.
- d. The examination of tide and its changes.
- e. Determination of condition of the beaches above the high-water mark.
- f. Determination and plotting of defensive constructions or emplacements behind the beach.

In other words, it is mandatory that all intelligence concerning the beaches and the area near the beaches be gained.

Next, the planning staffs determine forces that are considered best able to perform the tasks. In the above example, photo-reconnaissance, submarines and underwater demolition teams may be utilized to gain the required intelligence. Natives can be interrogated if available. All maps, charts and other data available are studied. Should the forces best suited for the action not be available, best use is planned for forces at hand.

During this period of the planning, phases are carefully considered and delineated. For example, the planning phase usually precedes most of the operational activity. Of importance is the training and rehearsal phase. Mounting is a time-consuming element preceding the operation. Movement to the objective and pre-landing operations occupy periods of time prior to the attack and the capture of the objective. Consolidation

and base development usually occupy specific periods of time and may be considered phases.

Phases and the component operations to be accomplished by subordinate elements tie in closely and on many occasions, overlap each other. This relation is logical and should be coordinated by planning groups.

In this development of a joint operations plan, we have now arrived at Step 5, which is the organization of the forces. Already, during the consideration of the factors already discussed, planning staffs consider the forces that are being made available for the coming operation. They carefully list the divisions and supporting units, the air elements and naval elements. Then, in reality, several task forces are created and molded into the whole. On occasion, when an entirely new force is being organized, it is not difficult to fit the units into a functional organization modeled to perform the specific tasks that must be accomplished. On other occasions, when an organization already exists, there is prevalent a tendency to fit the tasks to the existing organization. This must be avoided. When there is already a set organization, that organization should be changed to one best fitted to do the job. Planners may find it best to completely reorganize along functional lines.

The task organization is completed only after a careful analysis of component operations for subordinate elements of the force, the determination and the analysis of tasks to accomplish each of these operations, and an analysis of the phases. As the planning progresses, and as the analysis results in firm conclusions as to the tasks to be performed, the allotment of forces to perform these tasks becomes firm. After much juggling, the forces are arranged into the task organization tailored to fit the tasks.

Paragraph 3 of the Plan is now ready for final preparation (See Step 6). In Paragraph 3 of the Plan, the assignment of tasks to each subordinate element should follow in the order in which those elements appear in the formal task organization. It should be remembered that only the major subordinate elements of the command have tasks assigned them in Paragraph 3 of the Plan. The breakdown of the many duties



falling to the lesser elements is usually included in an annex which is appended to the Plan.

It is important that commanders of subordinate elements of the force be brought into conference by the planners in order to gain each commander's ideas of capabilities and limitations of his command and his ideas as to how best to accomplish his particular mission. Planning groups gain the undying gratitude of subordinate commanders when, by counseling with them, agreements are reached between the planning officers and these same commanders who are going to fight the battles. Quite often, commanders can assist greatly in the development of the plan, both as to idea and actual work. By being brought into the planning stages, commanders gain for themselves a great amount of information to stand them in good stead in the execution of their roles in the operation.

It must be remembered also that the subordinate commanders within a command have to make plans for their commands. When they are kept abreast of the planning within the major headquarters, they are able, by the method of concurrent planning, to have their staffs complete the orders for their subordinate commands almost as soon as the major command completes its plan and orders.

Just as subordinate commanders should be kept abreast of the planning at the top headquarters, all echelons of the planning staff should be kept up to date on the thinking

by the Force Commander and the principal members of his planning staffs. The planners of tactical employment must not plan without completely integrating their plans with those of the logistics planners. Top priority is given to the coordination of supply matters. Communications requirements receive the same attention.

The Seventh Step in the development of a joint plan is the solution of command and control problems. In unilateral operations, these seldom offer any difficulty. However, in joint operations, because of the variety of the forces involved, command and control matters nearly always present complex problems. These matters must be set forth clearly in the plan. If shifts in command are scheduled during an operation, these shifts must be stated exactly. There must never be any question as to who is in command. The complexities of the command and control arrangements may often warrant the inclusion of a separate annex to the plan. Unfortunately, there is no fixed form or format for command relationships. These relationships are determined only after considering the forces involved, the personalities of their commanders, the mission and the situation.

By this time in the planning, the plan itself should be fairly well formed. The information annexes and other documents which support the plan are nearing process of completion (Step 8). Since it is desirable to have the most factual and up-to-date data in the plan, that informa-

tion contained in Paragraph 1 is written only just before the plan is completed. All statements are concise and brief.

The subparagraph of Paragraph 1 that has to do with the listing of enemy forces should contain a concise and carefully worded synopsis of the enemy situation. Generous reference should be made to the Intelligence Annex, one of which usually accompanies an Operation Plan. The next subparagraph concerning friendly forces is important because herein are shown the friendly forces, not parts of the task organization, which may play an important or major part in the impending operation. When the mission of friendly forces closely ties in with the forces listed in the Task Organization, and complexities result therefrom, a separate Annex concerning information of these friendly forces and of their tasks is usually warranted.

The last or Ninth Step in the development of the plan is that of assembling and properly distributing in the annexes, all the material, information and instructions.

All through the planning process, a continuous check is conducted to test for feasibility in all matters. Members of the planning staffs should never lose sight of the fact that they are preparing a document which is a compilation of orders and instructions for the field commanders. In its final form, the plan and the annexes should be simple and concise, but complete. If the omission of any particular item detracts from the clarity of the plan or an annex, it should be included. The watchword is brevity with clarity. The plan with its annexes is then distributed to subordinate commanders and other interested agencies. The plan becomes a true directive, with the force of a directive or an order, upon receipt of instructions from higher authority, to execute the action set forth therein.

The success of the Joint Operation rests in a large measure on the excellence of the plan, and the quality of the plan is enhanced if a logical and time-saving procedure such as that described herein is followed during its development. The plan is the blueprint for the military action and, although battles are not won with paper, a good plan greatly assists the battle leader.



British Official

... and land in the planning stages.





Lt. Sigurd Rosen briefs his tank commanders on targets for today—bunkers, gun emplacements, observation posts—enemy positions spotted by infantry.



Pulling out! Sergeants Escola, Pergamo, Kahler, Westerhausen and Meek follow their platoon leader out of the assembly area on the day's bunker-busting job.



The platoon leader's tank noses down the road toward the initial point. Friendly mortars are laying down smoke to screen tanks moving into no-man's land.

## IN KOREA

# Battlefield Bunker Busting

U. S. Army Photos

Reports out of Korea over the course of many months have identified such places as the *Punchbowl*, the *Iron Triangle*, *Heartbreak Ridge* and the *T-Bone*. To the initiated, these signify *mountains*, and mountain positions and operations. Carrying things to their conclusion, the result is *bunkers*. The photo story on these pages portrays a bunker-busting operation by the Tank Company of the 31st Infantry Regiment of the 7th Infantry Division. Combat Photographer Pvt. Vincent Bonadonna recorded this recent tank action.

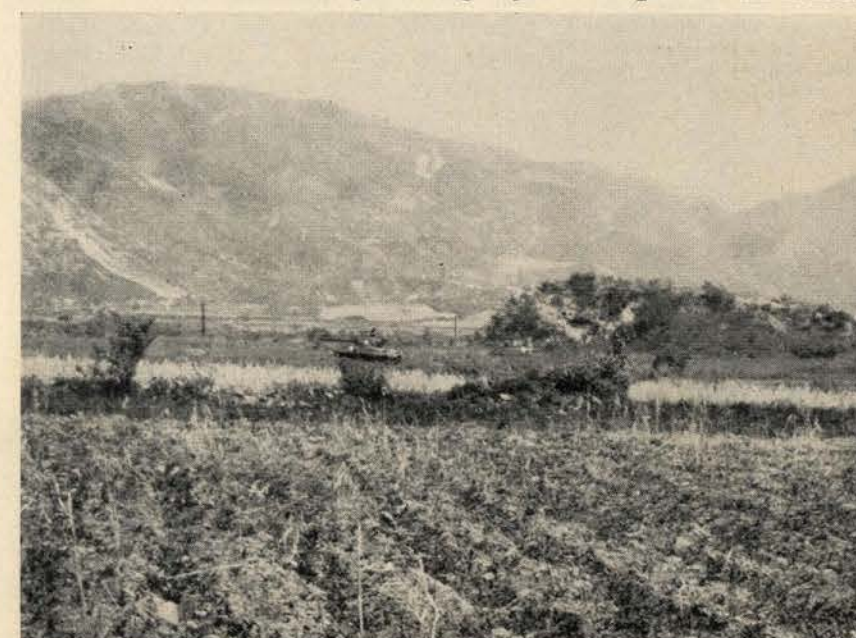
In position under the enemy's nose, the tanks begin firing on selected targets while the platoon leader marks new ones with tracer fire from the .50 caliber.



The platoon leader observes the results of the tank strike with his binoculars. Smoke can be seen rising from enemy positions, indicating success of the action.



The platoon moves back to friendly lines after having carried out its mission, one of the tasks that tanks are performing as part of the ground team in Korea.





# Task Force **CROMBEZ** at **CHIP'YONG-NI**

*Penetrating mountainous terrain held by a versatile enemy is an operation that requires planning, teamwork and aggressive action. Here is the story of a task force rescue mission that was successfully executed despite lack of ideal composition—a fully mounted armor team able to put all elements on the objective*

by **LIEUTENANT COLONEL GEORGE B. PICKETT, JR.**

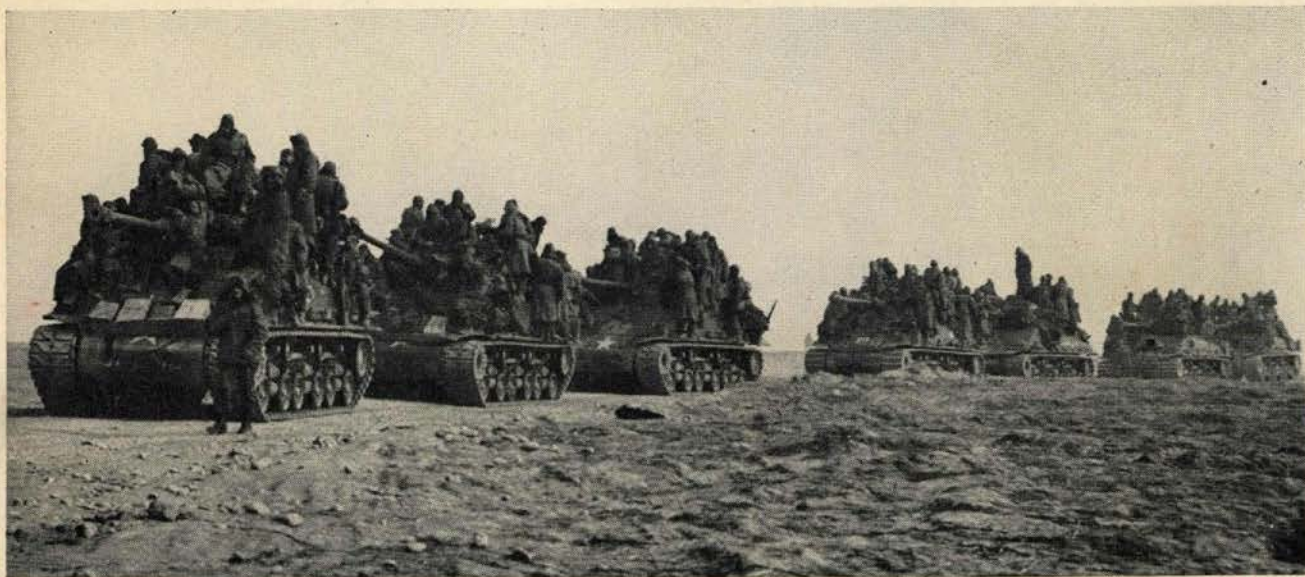
**C**HIP'YONG-NI is only a little mud hut village in Korea; but during the second week in February 1951, it was the "Bastogne" of the Eighth Army front. As you will remember, February 1951 was the month when the Communists were still trying to destroy the UN forces in Korea, but these UN forces had decided that

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they'd had enough pushing around. The 2d Infantry Division spent January and February absorbing and breaking up the Communist efforts to destroy X Corps in the Wonju-Chip'yong areas. By 13 February, the 23d Infantry Regiment of the 2d Division, with a UN battalion attached, was surrounded at the important road center of Chip'yong-ni. It appeared that this force would be overrun momentarily and destroyed. To complicate the situation, X Corps had no unit it could spare to break

through to relieve it. In order to remedy the situation, IX Corps was directed to send a force over into the X Corps sector and relieve the beleaguered Chip'yong-ni garrison as rapidly as possible.

On 14 February the 5th Cavalry Regiment was located in Yaju, on the west bank of the Han River, in IX Corps reserve. As soon as the mission of relieving the Chip'yong-ni garrison was received from Eighth Army, Major General Bryant E. Moore, the Corps Commander,



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Forming the task force in friendly territory with infantry mounting the tanks; not an assault formation, but transport.

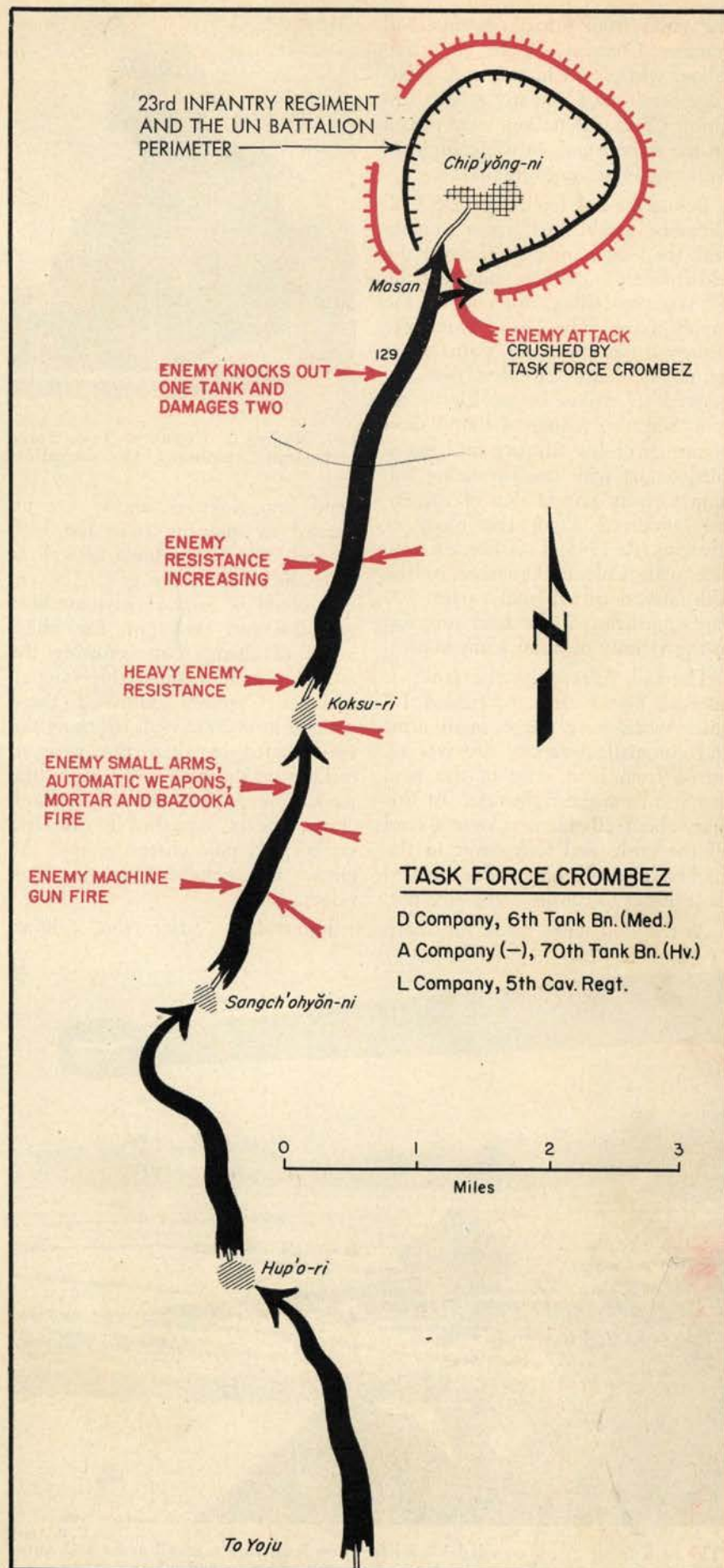


alerted the regimental commander, Colonel Crombez, by telephone at 1500 to be prepared to go to the relief of the force surrounded at Chip'yong-ni. He further directed Colonel Crombez to start planning the operation along the Koksuri axis. The Corps Commander telephoned Colonel Crombez again at 1700 and informed him to proceed immediately on the relief mission.

The 5th Cavalry RCT made a night march from its assembly area at Yoju to the vicinity of Hup'o-ri. On the morning of 15 February 1951, the 1st Battalion and later the 2d Battalion were committed north toward Koksuri in an effort to drive through to Chip'yong-ni, a distance of about seven miles. By 1100, the regimental commander realized that the enemy offered too much opposition for the infantry battalions to be able to reach Chip'yong-ni before dark. Feeling that the entire route to Chip'yong-ni was heavily defended by enemy forces, he decided that only an armor task force would be able to penetrate the enemy-held territory in time. Thereupon, he began to plan and organize Task Force "Crombez." In addition, he decided that supply trucks and ambulances, being assembled to accompany the 5th Cavalry Regiment to resupply the 23d Infantry Regiment and evacuate its wounded, would not be able to accompany the armor column.

At 1500, 5th Cavalry Regimental Commander decided not to wait for the supply trucks and the ambulances, arriving from the south, but to proceed to Chip'yong-ni with the armor task force. He planned to radio back and have the Commanding Officer of the 3d Battalion lead in the supply vehicles and the ambulances when the road had been cleared and was safe for the unarmored wheeled vehicles.

The task force consisted of the following elements: Company D, 6th Tank Battalion (13 M46 tanks); Company A (minus two platoons), 70th Tank Battalion (10 M4A3E8 tanks); and Company L, 5th Cavalry Regiment. The riflemen of Company L were instructed to ride on the tanks except the tanks of the leading platoon. They were instructed, further, to remain mounted at all times unless forced off by fire or to protect





the tanks from fanatic enemy tank hunters. Company D, 6th Tank Battalion, was placed in the lead. Four engineers from Company A, 8th Engineer Combat Battalion, were placed on the second tank in the column to clear any mines encountered.

Before the task force departed, Col. Crombez established radio contact with the Commanding Officer of the 23d Infantry, informing him that the TF was proceeding, but without the supply trains. The 23d's commander requested that he come, "trains or no trains." Colonel Crombez then requested air strikes before his departure, and also requested that liaison planes cover his advance and maintain contact with the advancing column to relay information of the enemy observed along the route of advance. At 1545, Task Force Crombez, with Colonel Crombez in the fifth tank, departed from a point 500 yards northeast of the road junction in the vicinity of Sangch'ohyon-ni.

The task force, with the tanks at intervals of 50 yards, proceeded 1.8 miles when long range small arms and automatic weapons fire was received from both sides of the road and also from the right rear. At this time, about 30 riflemen were forced off the tanks and took cover in the ditches. The TF commander directed the column to continue the advance.

As the lead tanks made the sharp



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Col. Marcel G. Crombez, Task Force commander, planning the operation.

bend into Koksuri, enemy fire increased in intensity from the high ground west of the town as well as from the ridges to the east. The enemy could be seen clearly; machine gun fire and tank gun fire killed many of them. Not counting the attacking force against Chip'yong-ni, Colonel Crombez estimated there were at least 2000 Reds opposing the two infantry battalions that were attacking up the high ridges along the road. Except for die-hard antitank crews, rocket launcher teams, and satchel and pole charge groups, the enemy was emplaced on the high ridges.

Immediately after the column

passed through Koksuri, about 100 additional riflemen were forced from the tanks, but the TF commander, feeling that the success of the task force depended on a rapid advance, directed the tanks to continue.

North of Koksuri, the road passed through the valley, following the hillside on the left closely, until the high ground or summit, where it then angled over along the hills on the east. As the tanks approached the summit in the pass near Benchmark 129, close teamwork among the tanks was particularly necessary since the enemy was located at the top of the cliffs, directly overlooking the task force column. Enemy fire intensified, and rocket launchers were fired and satchel charges thrown from the heights. At the summit of the pass, 5.25 miles from the point of departure, the leading tank was hit by a rocket, wounding everyone in the turret. However, the tank was not disabled. The fourth tank was struck in the turret by a rocket that exploded the ammunition in the ready racks, set it on fire, and killed all three men in the turret. The driver gunned the motor and moved the tank off the road to clear the advance of the remaining tanks. Since the enemy fire was so intense along the road, the TF commander decided that wheeled vehicles would be unable to pass. He radioed the regimental operations officer to delay the trains and ambulances until he gave the order personally for their forward movement.

Shortly before 1700, the Task Force had almost reached the defensive perimeter of the 23d Infantry RCT. Stopping in the vicinity of the road junction near Masan, the tanks cleaned out the area to the right of the road by heavy and concentrated fire. Enemy troops, attempting to escape up the draws, bunched up in groups of as many as 50 to 100 and were destroyed by HE rounds. This fire hit the enemy in the flank as he was making an attack on the Chip'yong-ni perimeter itself. The Task Force had struck the CCF, attacking the 23d Infantry Regiment, at a most advantageous moment, since the 23d Infantry was at that moment making a counterattack to regain a 155mm howitzer battery position that had been overrun. A tank platoon of the 23d Infantry met the leading tanks



U. S. Army

"The task force . . . proceeded 1.8 miles when long range small arms and automatic weapons fire was received . . . Riflemen were forced off the tanks . . ."



of the Task Force at the perimeter. Contact was made at approximately 1700 after a 6.2-mile advance.

When the Task Force entered Chip'yong-ni, 23 infantrymen and the four engineer soldiers were still aboard the tanks. Of these, 13 were lightly wounded, and one died of wounds that evening. The infantrymen, forced from the tanks before reaching Chip'yong-ni, made their way back to the regiment, approximately 100 returning to the original point of departure that night.

At 0900 on 16 February, the scheduled time for return to the regiment, the TF commander informed his assembled task force that the return to the regiment would be postponed because of the weather. A light snow was falling, and visibility at times was less than one hundred yards, neutralizing friendly air support. The weather cleared up at 1100, and the task force was reassembled.

At 1215 the Task Force started back. The TF Commander asked the CO of the 23d Infantry to place a heavy 4.2 mortar concentration on the pass as the task force approached. On the return trip, not a single enemy was seen nor was a single shot fired. The Task Force made contact with the First and Second battalions of the 5th Cavalry at 1245. At the time, the First Battalion was mopping up the ridges in the vicinity of Kokch'on while the 2d Battalion was mopping up the ridges in the vicinity of Hill 143.

The fact that no enemy forces opposed the Task Force on its return indicated that the CCF had been crushed and decisively beaten; they suffered an estimated 500 killed. The enemy had been forced to break off his attempts to destroy the 23d Infantry and the attached battalion and to prevent relief from reaching Chip'yong-ni.

### Evaluation

Tank-borne infantry cannot be expected to do the job of armored infantry. The Chip'yong-ni action was definitely a mission for a combat command or an armor group. If the TF commander had been required to fight in Chip'yong-ni he would have needed his infantry. An armored infantry company mounted in armored personnel carriers would have arrived in Chip'yong-ni ready to fight, besides



U. S. Army  
"An armored infantry company mounted in armored infantry carriers would have arrived in Chip'yong-ni ready to fight, besides reducing infantry losses."

reducing infantry losses perhaps 80 per cent.

The relief of the 23d Infantry was an ideal job for a reinforced tank battalion, with armored infantry in support. It assisted in proving false the generalization that Korea is not tank country. Component elements of an armored division or an entire armored division could be used in Korea.

The terrain from Koksuri to Chip'yong-ni would not have accommodated an entire armored division. However, a combat command or an armored group, attacking with a reinforced tank battalion (containing a minimum of one company of armored infantry) in the lead, followed by a reinforced armored infantry battalion (containing at least one tank com-

pany), could have performed the mission with only a small fraction of the loss and would have been able to continue the attack in the Chip'yong-ni area after the link-up.

Communication, maintenance, and re-supply facilities in the average infantry regiment are not adequate to support for continuous operation the number of tanks the 5th Cavalry Regiment had at the time. The operation at Chip'yong-ni was successful because the objective area was a defended perimeter of friendly forces.

It is difficult to fire from the deck of a moving tank. The practice of tanks carrying infantrymen through enemy territory where the riflemen must fight constitutes not an assault formation but a method of transportation. However, in this situation the TF commander had no alternative due to the lack of armored personnel carriers. A tankdozer normally should be a part of like task forces for use against physical obstructions and roadblocks; but once again none was available to the TF commander.

### Lessons Learned

1. Tank-borne infantry cannot perform the armored infantry role. Infantry units employed as part of an armored task force for deep penetrations into the enemy rear must be provided with armored personnel carriers.

[The proposed House reductions in the military budget] would eliminate 1,250 of the armored infantry vehicle, T-18, which would mean that only one third of the active Army could be equipped, and production lines would have to be closed down. This action would upset the balance which we have been striving to maintain in our procurement program and would seriously affect the Army's mobility and impair the vital teamwork which is so essential to the success of armor-infantry operations.—Gen. Collins before the Senate Appropriations Subcommittee.



2. A tankdozer should be included as a part of all large armored task forces in Korea.

3. The CCF antitank doctrine calls for the maximum use of tank-hunter teams employing rocket launchers, pole charges, satchel charges, and bangalore torpedoes.

4. Effective tank-infantry communications and methods of target designation from infantry to tanks must be prearranged and understood by all elements.

5. Any armored column containing a company or more of tanks should be supported by a tank recovery vehicle.

6. The shock action of tanks is extremely effective on the Reds. Although the CCF tank-hunter teams were fanatical in their reaction to the initial advance, the CCF made no effort to interfere with the return of the column but were content to stay out of sight of the tankers.

7. The "tigerization" of tanks is not as effective a psychological hazard to the CCF as previously anticipated. Both tanks destroyed by the enemy were "tigerized."

8. Tank units can penetrate rapidly deep into an enemy position but cannot be accompanied by standard infantry. This situation requires the tank units to give up objectives that could be held if the infantry could accompany the tanks at the same rate of speed and with armor protection. Small provisional armored infantry units can be formed, when time permits, by utilizing half tracks and M39 utility vehicles from armored FA battalions to mount available standard infantry elements.

### Summary

The action at Chip'yong-ni demonstrated the flexibility in the tempo of advance available to the commander of a modern combined arms team. If infantry action, supported by tanks, is too slow, he can change his pace to tank action, supported by infantry, in order to accomplish his mission. The action by Task Force Crombez at Chip'yong-ni will become one of the epic actions of the Korean conflict. It reflects highly upon all involved and shows the courage, initiative, and determination of our fighting men when the chips are down.

## OPERATION FLEABORNE

by CAPTAIN RICHARD W. STREIFF

The air-lift of a small-sized unit by liaison type aircraft to establish a bridgehead was successfully conducted at Fort Hood, Texas during Exercise Long Horn, the joint, large-scale maneuver held there in March and April 1952.

Thinking that during the exploitations phase of Exercise Long Horn it would be possible to air transport quickly by liaison aircraft under the cover of darkness, a company of armored infantry personnel to positions behind the Aggressor lines, with the mission to seize and hold some key objective or cut lines of communication, Maj. Gen. Bruce C. Clarke, commanding the 1st Armored Division, planned and executed such a "Fleaborne" Operation behind his own front lines during the field exercise. General Clarke was assisted in the planning by Captain B. C. Walters of the First Armored Division Aviation Section.

General Clarke employed fourteen liaison planes to transport the personnel and portable equipment of Company "B," 701st Armored Infantry Battalion to the "objective" area. During the afternoon preceding the nighttime operation, the fourteen pilots and the personnel of Company "B" commanded by Captain Bowden were briefed.

At 1915 hours a plane with a control officer equipped with an SCR 509 radio and twelve NX290/CV lanterns landed in the "objective" area. The plane immediately returned to its base field, an emergency air strip marked with twelve road flares. By 2000 hours the objective landing strip was marked with lanterns and ground to air communications was established. At that time fourteen planes, each with one armored-infantryman with equipment, took off in succession from the base air strip for the "objective" area. As the planes landed, the troops rapidly dismounted to take up positions and the planes took off immediately to continue the shuttle runs.

The loading and unloading of troops and equipment and the control of aircraft were well organized at both air strips, making for a smooth, rapid surprise vertical envelopment.

The first men to land isolated the landing field by establishing road blocks. As more members of Company "B," 701st AIB arrived, the defense was strengthened and expanded. The second platoon landed and then struck out to successfully seize a commanding terrain feature. After arrival of the final platoon, the company was made ready to move out on foot to seize an objective. The mission of the company was accomplished by 2330 hours and nighttime defensive positions were established to secure the "objective" until a link-up by armor elements could be effected early the next morning.

In 3 hours and 10 minutes the fourteen liaison planes made 268 landings and take-offs from these emergency landing strips without incident. Each plane flew nine or ten round trips. All equipment was flown in on the laps of the air-lifted personnel. Aerial resupply could have been accomplished by the utilization of the bomb racks mounted on the liaison planes and the necessary air drop containers organic to the unit.

The entire operation was most successful. It was excellent training for the pilots and for the personnel of Company "B," 701st AIB, every one of whom volunteered for this "Fleaborne" training.

To be successful, an operation of this type would of necessity have to be quickly followed by an attack effecting a link-up. Such an operation is truly indicative of the fighting potential of any unit if only the commander fully realizes what is at his disposal and then employs these forces and elements with determination, force, speed and imagination!



# An Officer and a Gentleman

by DEAN E. RYMAN

**D**URING the Spring of 1806, Congress sharply revised American policy concerning other than commendable behavior by commissioned officers of the land forces. Tolerance for their objectionable though non-criminal actions had theretofore been customary, unless the undesirable conduct amounted to what was then called "behaving in a scandalous and infamous manner." But the new century brought a new rule, one that was soon commonly described as "a higher code termed honor"—an obligation to ever act and speak as "an officer and a gentleman."

The amended law did not make refinement and good breeding compulsory. It did not declare that a military leader, in order to be deemed a gentleman, must always be gracious, considerate, and respectful. Some who are deficient in these tokens of gentility (to equals and subordinates, at least) are often excellent administrators or capable of arousing their followers to accomplish great deeds against discouraging odds. There has always been room for rough ashlar among warriors.

As used in the 83rd Article of the code enacted in 1806, as well as in the laws whereby its mandate has been perpetuated—AW 61 of 1874 and AW 95 in each of the succeeding Articles of War—the word "gentleman" signified a man of honor. All commissioned members of the Army were expected to be individuals conspicuous for unwavering adherence to the truth and for remaining undaunted by disturbing consequences to themselves arising from doing their duty as they saw it. They were to be

noted for conduct untainted with moral turpitude and for sincerity and impartiality in thoughts, words, and actions on all occasions. Every officer, in addition to possessing physical courage, was to be constantly loyal to his country and all for which it stands, as well as imbued with the boldness of spirit and strength of mind that bring about fidelity to all one's own responsibilities, public or private, whether they are imposed by others or undertaken of his own volition.

Since a time whereof the memory of living men and their fathers runneth not to the contrary, the deportment of all commissioned leaders of the Army—and later, the separate Air Force—when on active duty, regardless of component, has been thus measured. A similar rule for evaluating the behavior of officers of the Navy and its related services has long prevailed. Neither the extent of a particular individual's military training or experience, nor the probable length of his tenure of a commission or of an active duty status, has been given any weight. All such persons together were considered a single group, segregated from the enlisted men of the armed forces as by a veil beyond which the latter did not pass; even as one of blue and purple and scarlet (of fine twined linen and cunning work) isolated the repository of the Ark of the Covenant. And as in those far-distant days, from all authorized to enter the thus reserved place there has been demanded during many decades compliance with a more exacting pattern for behavior than that to which the excluded persons were required to conform.

Respect for this policy—in the final analysis—has been secured by drumming out of the ancient and honorable profession of arms those who flouted its "higher code termed honor." In relatively recent years, this drumming-out has been only figura-

tive; effected by publishing military orders which declared the offenders' dishonorable separations and the reasons therefor. But virtual certainty of such action by competent authority, plus knowledge that former comrades would then deem further association with the culprits scandalous, has been a penalty usually more dreaded than the retribution visited upon Nadab and Abihu. For generation after generation, it was the law—and the practice—that "any officer or cadet who is convicted of conduct unbecoming an officer and a gentleman shall be dismissed from the service."

At the head of the once commissioned rogues thereby driven into the wilderness, and numerically superior to all other groups of the banished ones, are the non-felonious liars who made untrue statements, oral or written, whether to a superior or to others in the service—particularly to an immediate commander, when the purpose of such comments, or the fairly probable result thereof, was to thus affect the official action or liability of the persons addressed. Hard upon their heels march the dismissed officers who departed seriously from the truth when they spoke or wrote privately; and those who kept their lips closed when honor-bound to reveal the truth. Among the knaves whose condemned mendacity was of a private character are the slinking whisperers spreading "half truths" relative to their comrades, statements which (standing alone) are literally true but mean something quite different from what the whole truth—known to the speaker or writer—would signify. It has usually mattered not whether an affirmatively evil purpose characterized the utterances or writings of persons in any of these groups or whether they conversed, wrote, or remained silent with gross disregard for the consequences to others. For our fellowship, as Whittier expressed it, "when

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faith is lost and honor dies, the man is dead."

In this Legion of dishonor are also platoons of ex-officers who disregarded other obligations implicit in the holding of a commissioned status, as distinguished from the status of merely being hired. A clear majority of them are persons to whom compliance with the letter of the law, rather than with its spirit, was enough; though interspersed here and there can be seen individuals whose proven conduct is undeniably criminal under almost universally accepted standards, even tainted with moral turpitude as well. The behavior of most of those who put too much weight on the letter of the law was usually neither expressly lawless, nor clearly infamous or scandalous, nor morally intolerable, but their fellows declared it so grossly unfitting and unworthy, not merely inconsistent with good taste and propriety, as to demand their expulsion.

### Legion of Dishonor

Some of them did not strictly eschew immorality; many failed to avoid actions inconsistent with complete honesty; others did not loyally support their superiors, were indifferent to the latter's known wishes that had been stated otherwise than by direct orders; and quite a number exercised discretionary authority oppressively or claimed the privileges of officers under circumstances when that was not warranted. Among the confirmed infringements of the 95th Article of War, are cheating during professional examinations, requiring excessive toil or very arduous duty of other sorts for especially long periods when there is no military necessity, wearing the insignia of an unearned rank or an unconferrd honor merely to impress observers, securing credit lawfully but so often as to force a conclusion that grossly inadequate consideration has been given to how the debts can be paid, scorning a promise to avoid strong drink or houses of prostitution, and being boisterously companionable with military personnel of lower rank. Others who have been booted out as bounders include those who dealt off the bottom of the deck in a penny-ante game, who seriously miscounted their strokes in a golf tournament, who verbally abused enlisted men held in

formation, who participated in a wager for a sum manifestly beyond that which a bettor could afford to lose, who secretly altered a military record pertaining to themselves with no purpose other than to avoid unpleasant comment, who used profane or vulgar language to chaste women or about them, or who read another's private letters without his permission or a direction by competent authority.

There are still others, though this does not seem an appropriate occasion for a complete roll call, even by groups, of all whom their comrades have expelled because they were not men of honor. If you would know more of what was deemed to be "conduct unbecoming an officer and a gentleman" before June of 1951, consult Colonel Winthrop's too often dusty volume or the official rulings of the several armed forces. But bear in mind, should the knowledge thus obtained shock you at first, that the proscription enacted in 1806 was liberally construed for a century and a half with a view to safeguarding the reputation of all military leaders. Thousands of officers had hundreds of opportunities—often tempting—to overlook the "higher code termed honor." You need not hang your heads in shame for the shortcomings of the members of our profession as a whole.

The sponsors of the Uniform Code of Military Justice did not contemplate a material change. Their proposed 133rd Article read: "Any officer, cadet or midshipman who is convicted of conduct unbecoming an officer and a gentleman shall be dismissed from the service." Like the law to be thereby replaced (AW 95 of 1948), the proposed new one inveighed against "conduct unbecoming an officer and a gentleman," assuming the significance of those words to be well understood, and prescribed a dismissal—neither more nor less—upon conviction.

That new Article would have created no criminal offense; it would not have authorized imposition of a punitive loss of liberty or property. An effective means was to be provided whereby commissioned members of all the armed forces who would not conform to the canons of ethics their fellows deemed obligatory could be ousted whenever—for one reason or

another—employment of a different disciplinary method would likely bring about some punishment other than a dishonorable separation; just as lawyers and doctors drive out their shysters and quacks, even when the latter cannot be jailed or fined. My own Military Justice mentors, speaking of the 1916 version some thirty-odd years ago, described it to me in unforgettable language as "a device for plucking a tainted apple from the barrel, lest its putridity spread." The plan contemplated early in 1950 was to continue that scheme as it had stood since 1806; but when the new code was finally enacted our erstwhile familiar "*shall be dismissed from the service*" had become "*shall be punished as a court-martial may direct.*"

### What Is Punishable?

Unlike its predecessors, this new law is indubitably penal. Since an offender's liberty and property may be taken from him by the express authorization contained in Article 133 UCMJ, it follows that under familiar rules for interpreting criminal statutes this altered mandate must be construed strictly against the United States, and in favor of each alleged violator, whenever the problem before the court is whether a specified action by him constitutes "conduct unbecoming an officer and a gentleman." Congress has made no statement concerning what misbehavior is now within the scope of the last quoted words; it has not expressly authorized any person to declare what is thus prohibited; nor have our national lawmakers provided a standard for guidance of the President, should he determine that, either as the Commander in Chief or under Article 36a UCMJ, he ought to disclose to the armed forces what words and actions are punishable under the new law.

For many of the actions which I have listed as violations of the 95th Article of War, and for many not specifically mentioned, the consensus of American opinion has been during many decades that dismissal alone is the only appropriate and just retribution. Have we been mistaken for a century and a half? Is it believable that Congress deliberately authorized jail terms and fines for such misconduct; and without even a debate concerning the need for a change? If the



national legislators did not so intend, which actions condemned by the older law are also punishable under the new one? Who determines those that are to be so considered, the President not having done so even if he has the authority? Pause thoughtfully before you decide that Congress has delegated such power to courts-martial, temporarily assembled groups who must not be even scolded when they make a mistake. Look at the new code's elaborate provisions for original, appellate, and ultimate reviews, if you would know how much Congress trusts the tribunals of the armed forces to reach proper conclusions.

A greatly abhorred tyrant, so the story runs, habitually phrased his edicts in words of unclear purport—that more of his subjects might inadvertently incur the punishments he liked to inflict. Did our Congress adopt that course? If not, how may this new statute be reconciled with the long sanctioned rule that no American (not even a “brass hat”) need ever fear a punitive loss of either liberty or property until he has disregarded a plain warning to do or say (or refrain from doing or saying) clearly indicated acts or words under readily identifiable circumstances? These questions cannot be answered until the Court of Military Appeals has considered at least a few alleged violations of the new version of the 1806 mandate. Meanwhile, many sober-minded observers are fearful that Article 133 UCMJ is so impregnated with the Caligulan curse as to be incapable of any lawful enforcement at all.

### A Sacred Trust

But suppose for the moment that their fears are unfounded or greatly exaggerated; that the Court of Military Appeals does find a way to sustain this new Article in whole or in part. There will still remain—*un fait accompli*—the legislative determination that dismissal for “conduct unbecoming an officer and a gentleman” is no longer mandatory. That merits the serious consideration of every wearer of the uniform in our armed forces.

In the past, officers' bars, stripes, leaves, eagles, and stars have seldom been entrusted to men incapable of disciplining themselves or undisposed

to do so. It has been the rule that an officer could be convicted only once: after such an event he would not be an officer. The moment a mistaken choice as to the holder of a commission has been discovered—conduct on his part that was uncommendable and too serious for a summarily ordered penalty—the offender has been hustled out of the service with scant ceremony. Now, though such a person is neither worth the higher pay he draws nor fairly entitled to the privileges he enjoys, he may be tried again and again—as often as he offends. Each time he may be punished as lightly as the members of the court-martial may choose, however guilty, and he may long remain a thorn in the side of the armed force that once accepted him: in fact, until he is eliminated by administrative methods, with many of the honors and rewards that accrue to those who serve faithfully and well.

Speculation here and now concerning the immediate cause of the unhealthy situation seems profitless. This is not an appropriate forum for such an inquiry. But if it is due to something other than a heedless blunder, some serious thinking about a possible underlying reason therefor

### The Questions Involved

Undoubtedly there are Americans (some in officers' uniforms, I fear) to whom dismissal from a commissioned status is not a crushing retribution which cancels cherished aspirations and makes further existence seem futile. Are there many of them? Perhaps an enactment of Article 133 UCMJ, in the words chosen when the sponsors of the new code first wrote it, would not have accomplished the purpose initially declared by Congress in 1806—to which there has been continued adherence, as far as the books of the law disclose? Possibly we no longer believe that to be a sound policy, and perhaps keeping such a statute on the books would have been mere hypocrisy? Mayhap the character of our people (including their armed forces?) has so deteriorated that the enactment—as proposed—would have proven but a dead letter law?

It could be that we have once more, as before 1806, become a nation prone to tolerate behavior which is cheap and shoddy—“unbecoming

an officer and a gentleman?” If so, is that a direct result of the global conflict which has lately sputtered out, with no one unquestionably the victor? Possibly, on the other hand, it is the slow but inevitable outgrowth of national tendencies during the Roaring Twenties, when we habitually scoffed at nearly every standard theretofore deemed obligatory—in and out of the military establishment? Perhaps our national lawmakers, and the sponsors of our new code, were wise to recognize existing conditions and to so word the new law as to put it in harmony therewith?

I ask these questions, but do not answer them; for doing so, and then acting as the answers suggest, is an inescapable responsibility of those still on active duty as officers. I am but reading from a script near a plainly indicated cue-line: “The old man exits.”

### The Higher Code

Possibly I am unduly disturbed; but I submit that although Article 133 UCMJ renders lip-service to “a higher code termed honor,” commissioned personnel of the armed forces can no longer be considered a group apart, can no longer be fairly deemed bound to comply with a more exacting pattern for behavior than that to which others must conform. Congress has taken an action against which Mr. Justice Nott warned so many years ago: “the standards of the service” have “come down to the requirements of a criminal code.” The sun has been darkened, and the veil is rent in the midst. To our lawmakers, the reason for the fate of Nadab and Abihu has lost its significance; the tale is to them just a bit of folk lore inappropriate for modern times. Will the armed forces, thus invited, now grow heedless of all our ancient landmarks?

Two facts still remain, however; both quite beyond the power of anyone to alter. Only officers who are able and willing to discipline themselves—to ever act and speak as becomes “an officer and a gentleman,” can maintain discipline over others; and nought but a Pyrrhic triumph can be secured by any command when discipline falters. None of the armed forces can afford to retain any commissioned officer who is not thoroughly so convinced.



## Tanks and Infantry Blast Red Positions In 9-Hour Foray

By the Associated Press  
SEOUL, Sunday, June 1.—Allied tanks and infantry blasted Communist positions in a 9-hour foray.

# ARMOR NOTES

## Red Tanks and Troops Attack in East Korea; Assault in West Ends

By the Associated Press  
SEOUL, Korea, June 19.—The Communists assaulted two United Nations positions in East-Central Korea today after dropping at least a new Allied plane.

### Generals White and Collier in Command Shifts

Major General I. D. White, Commanding General of The Armored Center and School for the past year, will leave Fort Knox in August for duty in the Far East Command.

Gen. White will be succeeded by Maj. Gen. John H. Collier, now Inspector of Armor in the Office of the Chief of Army Field Forces.

Gen. White's assignment will be announced by the Far East Command. Gen. Collier's successor had not been named at press time. Both officers are members of the Executive Council of the U. S. Armor Association.

### Armored School Assistant Commandant

Brig. Gen. Robert Lee Howze, Jr., assumed the position of assistant commandant of The Armored School upon his arrival at Fort Knox on June 12. He came to The Armored Center from the Caribbean Command, where he had been chief of staff since February 26, 1951, with headquarters at Quarry Heights, Canal Zone.

General Howze replaced Col. Thomas D. Roberts who was reassigned as a member of the Joint Army Military Advisory Group in London, England.

The new assistant commandant is an experienced armor leader. During World War II he served with the 8th Armored Division as chief of staff and in 1944 and '45 in Europe commanded the 36th Armored Infantry Regiment of 3d Armored Division. He is a Class of 1925 graduate of West Point.

Col. Thomas D. Roberts, who has seen 16,028 students finish the many and varied courses at The Armored School during his tour as Assistant Commandant, left Fort Knox 7 June for his new duties.

A recognized authority on Armor doctrine and tactics, Col. Roberts had served The Armored School since November, 1948, when he was assigned as Director of Instruction. In July, 1950, he moved to the position of Assistant Commandant, to instill the importance

of Armor tactics and associated subjects into the lives of Army personnel of all ranks, from private to the field grades.

### Armor Career Management Chief

Col. William J. Bradley, Chief of the Armor Section of the Career Management Group since mid-1949, has been ordered to the Far East Command for assignment.

Col. Bradley has been succeeded by Col. Charles E. Dissinger, who has been Chief of the Plans Section of Career Management Division for the past year.

Col. Bradley is a member of the Executive Council of the U. S. Armor Association.

### Detroit Trains Men On New Tanks

A long-range training program to prepare members of the armed forces in the operation and maintenance problems of the latest family of combat and cargo vehicles before the new items reach the field was launched at Detroit recently.

An initial group of 13 civilian and military instructors and supervisors from Army installations throughout the country started studying the new features of the M47 medium tank, now in mass production. The Ordnance New Vehicle Maintenance School, which opened at Fort Wayne June 9, is under the supervision of the Detroit Ordnance Tank-Automotive Center.

Due to the urgency and importance of training on this vastly improved tank, the first class started in incomplete classrooms with only the bare essentials, two months after the program was formulated.

Upon completion of this course the student-technicians will return to their installations to set up training programs for the men who will shortly begin servicing and driving this tank.

Although the first group is small in size, it is the forerunner of many classes to follow. An average of 5,000 men per year are expected to attend the courses covering the entire new line of track and wheel vehicles, many still secret, which are now in the final stages

of design or nearing mass production.

Among the more than 35 new models which will be studied by the technicians, supervisors and shop foremen, are the new T48 medium tank, T41 light tank, T43 heavy tank, Otter and a complete new line of cargo trucks ranging from the new ¼-ton jeep to huge 15-ton monsters.

Earlier courses were held at Detroit Arsenal, Lima Ordnance Depot, Atlanta Ordnance Depot, and in several industrial plants. The only courses still in operation are at Atlanta, on a small scale. Lack of suitable space or facilities prevented permanent schools of the scope desired at any of these places.

Not only will the Army benefit from this program but representatives of all the armed forces will soon be attending the school for training on the latest motorized equipment.

North Atlantic Treaty Organization members will also receive instruction so that the maximum use will be obtained from equipment that they will receive under our present aid program.

### Gen. Hodge Addresses Advanced Class

Lt. Gen. John R. Hodge, who succeeded Gen. Mark W. Clark on May 8, 1952 as Chief of Army Field Forces, addressed the Armored School's Advanced Class 1952 graduation during one of his first inspection trips as AFF chief.

General Hodge told the 221 graduating officers on June 6, "Our most important duty is to train young Americans to survive in combat to keep our country free." Recognizing the 29 students from 18 friendly foreign nations, he commented that our "fighting team now is becoming an international team." And the U. S. Army school system is part of the team program, he said.

General Hodge told the graduates that as long as they remain officers of the Army they will never finish studying. He advised them to keep physically fit. Many officers, he said, failed during World War II and in Korea because they were not in good physical condition. This, General Hodge said,



is necessary to mental alertness and to prompt action.

Maj. Gen. I. D. White, commander of The Armored Center and Armored School, also extended his congratulations to the graduating officers. General White pointed out that the 1951-52 class was the first to receive instruction in our new tanks with their new fire control system, radios and armament.

### Army Develops Heavy Duty Flatcars

The first of several hundred huge railway flatcars developed by the Army Transportation Corps are now rolling off production lines and are already being put to use in moving the Army's new M47 medium tanks and other heavy military equipment.

One of the first considerations of the Department of the Army in the development of large pieces of ordnance such as tanks and heavy artillery, is the transportation characteristics of the equipment concerned. Obviously, military equipment weighing upwards of 60 or more tons would be of no value to the service if it could not be transported over the highways or railroads from the factory to the using arm or port of embarkation.

These considerations are necessary at the earliest practicable stage: clearance restrictions, weight limitations on both rail and highway bridges and capacities of carrying equipment are some of the factors that must be carefully weighed long before a heavy piece of ordnance comes off the assembly line.

About a year and a half ago it became obvious to the Transportation Corps that consideration would have to be given to procurement of special heavy duty flatcars to carry the big tanks then being developed by the Ordnance Corps. Clearance engineers in the Office of the Chief of Transportation made special studies of the problem, including equipment available to the commercial carriers and special clearance studies to determine the basic dimensional characteristics of cars which would have to be constructed if not available in sufficient quantity from the railroads.

Because of the always high demand for flatcars by all shippers, both military and commercial, and because of the limited number of cars available, consultation was held with representatives of the Association of American Railroads. This was in keeping with the Army's policy not to compete with commercial carriers if the carriers could supply the necessary equipment. It was determined advisable to supplement the railroad ownership of heavy duty flatcars with specially constructed cars to be owned by the Army. This would then insure that the transportation requirements of the tank program would be met. After this initial research and determination was accomplished by the Transportation Corps, necessary procurement action was taken.

Recently the first of these cars to be used in the tank-shipping program rolled into the yards at the Hampton Roads Port of Embarkation.

The new 54-foot car was loaded with two M47 tanks, which heretofore were loaded but one to a car. The tanks weigh 93,000 pounds each, very nearly the capacity of the cars which are rated at 200,000 pounds; this is approximately double that of the average commercial type flatcar.

The new flatcars are of unusually heavy design weighing 110,000 pounds when empty, have six wheel trucks instead of the usual four to distribute the loads, and are designed for high speed operation, which means they can be coupled to passenger trains. For this reason, they are equipped with signal and steam lines. The cars have high beds because of special clearance requirements and are over ten feet wide.

### Air Force Tank Kills in Korea

A report by the U. S. Air Force on 24 months of operations in Korea lists 1,134 tanks destroyed by the USAF,

and 121 by attached units, for a total tank kill of 1,255.

### Belgium Receives M47 Tanks

The arrival from the United States of an initial consignment of ten Patton M47 tanks for the Belgian Army was celebrated at Antwerp on June 28th with a brief ceremony at quayside. The Patton M47 with its rubber caterpillar tracks—a feature about which many officers expressed their admiration—is an improved version of the Patton M46.

United States military officers attached to the embassy and high-ranking Belgian defense officers attended the ceremony. A Belgian infantry detachment was drawn up on quayside and a military band played as the tanks were unloaded from the Belgian cargo boat *Steenstraete*.

These ten tanks were the first of their type to be delivered to any European country scheduled to receive aid under the Mutual Security Agency program, though some were supplied to the United States Army in Germany a short while ago.



In August Maj. Gen. I. D. White will turn over command of the Armored Center and School to Maj. Gen. John H. Collier. Gen. White goes to Far East Command.



Brig. Gen. Robert L. Howze has assumed the post of Assistant Commandant of the Armored School, replacing Col. Thomas D. Roberts, who goes to London.







U. S. Army (1928)

## WORLD WAR I TANK CORPS HEAD PASSES AWAY

*Brig. Gen. Samuel Dickerson Rockenbach, retired, commander of our World War I Tank Corps, died on May 16th at Chevy Chase, Maryland, at the age of 83. A graduate of VMI in 1899, he served as a civil engineer before commissioning in the Regular Army in Cavalry in 1891. He served in the Cuban Campaign in 1890-92; with the Philippine Scouts from 1905-1910; in the Spanish-American War; and on the Mexican Border in 1916-17. In May of 1917 he accompanied General Pershing to France, where he served several months as Quartermaster of the AEF before being named Chief of the Tank Corps. In the postwar period he was Chief of the Tank Center at Camp Meade, Maryland, and Commanding General of the Military District of Washington. He retired in 1933.*

With the passing of Brig. Gen. Samuel Dickerson Rockenbach there is ended an era that saw the beginning of armored warfare. Gen. Rockenbach was commander of the Army's Tank Corps in combat. In France in 1918 there were in the United States Army under him two battalions of light tanks, directly commanded by George S. Patton (then Captain), and one battalion of heavy tanks.

Gen. Rockenbach was an inspiring leader and a farsighted pioneer of the tank. The tankers of the small American force were never surprised to see him on the field where our tanks were engaged with the Germans. These engagements were the small beginning that set the pace and established the tradition of armored warfare in the United States Army.

Patton's dash across Europe in World War II had its genesis in the bold devoted service of the old Tank Corps.

Gen. Rockenbach had but few tanks in the American Army and they were a vital necessity in the drive at the Argonne Forest toward Metz. He used the men and tanks to utter exhaustion and depletion. Some tank companies suffered over 90% casualties. At one time in the Argonne drive there were less than twenty-five operative light tanks available for combat.

The first breakthrough of tanks was under his command at St. Mihiel, when three light tanks personally led by Lieutenant McClure of Richmond, Va., from "A" Company of the 326th (later the 344th) Tank Battalion, broke through at Ville en Woivre and hit the Hindenburg line about the 14th of September, 1918, capturing a battery of artillery and returning to their unit with the breechblocks of two of the field pieces.

He was a fearless and farsighted leader. All honor to him.

The survivors of World War I tanks salute him, for under his command the early armored history was made, and the high standards of dedicated performance set for our Armored Service, which has made American armor a bulwark of strength in times of peril.—BRIG. GEN. HARRY H. SEMMES, RET.

## Civilian Component Training at Knox

Summer camp training for Armor civilian component units is in full operation at The Armored Center and will continue through August.

Following the departure of Military Academy upperclassmen on their combined arms tour, nearly 700 members of college ROTC units arrived at Fort Knox on June 21 for a six-week training period to be concluded on August 2. During the period July 6-20, approximately 2000 West Virginia National Guardsmen will train here. Approximately the same number from the Kentucky National Guard are scheduled for August 17-31 and various ORC units will be in training from July 6 through August 31. The ORC units include the 83rd Infantry Division which will occupy the summer camp during August 3-17.

General White at an orientation read a letter concerning particularly the ROTC cadets from 2nd Army Commander Lt. Gen. Edward H. Brooks. General Brooks wrote:

"The source of the bulk of our officer corps in the future will be the ROTC. The initial impressions which these young men receive at their educational institutions and on the posts where they get their summer training will be lasting, will shape in large measure their attitude toward the Army as a whole, and will be highly influential in their final development as Army officers."

Twenty-two colleges and universities are represented at the ROTC summer camp. Seventy-two of the cadets are students at Clemson University, 69 at Arizona, Norwich 67, Georgia 67, Texas A&M 54, New Mexico Military Institute 54, Michigan State 53, Ohio State 49, Massachusetts 36, VMI 32, Middle Tennessee State 29, Auburn 27, Illinois 24, Oklahoma Military Academy 24, Furman 8, Indiana 2, and one each from Kansas, Kent State, Clarkson Tech, Delaware, Wyoming and Carnegie Tech.

## BB Gun for Subcaliber Firing

The adoption of the "BB guns" as subcaliber devices on the tanks and tank trainer at the University of Arizona has been successful in giving ROTC cadets practical training as tank commanders and gunners in the Tank Gunnery course.

During the preliminary stage of the Tank Gunnery course it was felt that while the ROTC cadets were acquiring "book learning" of fire commands and the duties of tank commander and gunner they were not getting the "feel" that only practical application brings. The terrain boards were not achieving desired results. Actual firing with conventional subcaliber devices was out of the question because of the ammunition problem and the absence of a range.

The BB gun has many advantages.

**ARMOR—July-August, 1952**



It is inexpensive. Ammunition is no problem.

### West Point First Classmen Visit Fort Knox

The eyes of West Point's First Classmen were on Armor. In their annual combined-arms tour of military installations, cadets watched the mighty combat branch in action at its Fort Knox home and sized up opportunities that would be offered them as career officers in Armor.

It was a crowded four days the 507 First Classmen spent at The Armored Center in May. From the moment they poured down the ramps of the seven giant C-124 planes that brought them to Knox from Wright-Patterson Air Base in Dayton, Ohio, they were swept up in a rush of activity designed to make armor a vital part of their military thinking.

Maj. Gen. I. D. White's welcoming remarks stated the case squarely: "The American armored division is probably the greatest combined-arms team ever assembled and organized." But, he pointed out, for its efficient employment it must be transported and supported by the other great members of the armed forces team—the Navy and Air Force.

"Here at The Armored Center we teach and preach the doctrine of coordination and cooperation of the combined arms," said the commanding general.

Describing armor as "the great offensive combat arm of decision," General White told the cadets:

"You have heard, read about, and seen many means and weapons for overcoming enemy armor. Except for the tank—they fall into the category 'for defensive use only.' The offensive

requires the employment of tank versus tank."

### Tank Conference

Improvements and changes in the design and construction of the "Tanks of Tomorrow" were discussed in detail by over 100 top military and civilian technical specialists, engineers and tacticians during a two-day conference held in Detroit on 8 and 9 May.

Due to the lack of sufficient conference space at Detroit Arsenal, the meetings were held at the Chrysler Central Engineering Building in Highland Park. Col. Glenn C. Willhide, commander of the Detroit Arsenal and host to the conference, made the opening address.

The views and needs of the using services were discussed with Army Ordnance officials during the first day. Scale models of proposed tanks were inspected and a full scale mock-up of a new, prospective, light tank was examined.

The meeting closed with a visit to the General Motors Proving Ground at Pontiac on 9 May.

Among the many distinguished visitors were: Maj. Gen. I. D. White, Commanding The Armored Center, and Maj. Gen. R. W. Beasley, Army Field Forces; Maj. Gen. W. D. Maris, Office of the Army General Staff; Brig. Gen. G. S. Meloy, Jr., Infantry School; Brig. Gen. Carroll H. Deitrick, commander of the Detroit Ordnance Tank-Automotive Center; Brig. Gordon-Hall, British Army and J. N. Davis, Office, Assistant Secretary of the Army.

Others present included: Colonels E. M. Clarke, W. S. Triplet, W. G. Dolvin, R. R. Robins, H. H. D. Heiberg, S. G. Brown, J. F. Thorlin, R. E. Rayle, C. J. Rinker, W. J. Crowe,

R. Z. Crain, W. P. Withers, R. H. Grinder, D. A. McPherson, Charles B. Ewing, A. G. Chubb, A. G. Sangster, J. M. Henderson, L. A. Hammack and W. A. Call.

### Chrysler Corporation Names Executive in Tank Operations

The management team assigned by Chrysler Corporation to the preparatory contract for taking over tank production at the Detroit Arsenal has started work and Robert T. Keller has been designated General Manager of Tank Manufacturing Operations for Chrysler in both Delaware and Detroit. Mr. Keller is general manager of the Chrysler Tank Plant at Newark, Delaware, and now will have responsibility for both programs.

### 1st Armored Division Reunion

The Fifth Annual Reunion of the First Armored Division Association will be held at the Hotel William Penn, Pittsburgh, Penna., from Friday, August 29, to Sunday, August 31. Among those invited to attend are Generals Orlando Ward, Paul Robinett and Ernest Harmon. Information may be secured from William R. C. Ford, 1707 Oliver Building, Pittsburgh, 22, Pa.

### 5th Armored Division Reunion

Veterans of the Fifth Armored Division will hold their sixth annual convention on the Labor Day weekend in New York City. Sponsored by the New York Metropolitan Chapter of the Fifth Armored Division Association, the convention will take place August 29 to 31 at the Hotel New Yorker.

Major General Lunsford E. Oliver (retired), who commanded the division from its training period until the close of the war, when the division was poised on the Elbe River, less than 50 miles from Berlin, will be a speaker at the annual dinner to take place on the closing day of the convention.

A representative of the Grand Duchy of Luxembourg, which was liberated by the division in September of 1944, is also expected to address the dinner.

The three-day event will open with a dinner on Friday, August 29, with Al Germ of Cleveland, association president, presiding. A feature of the August 30 program will be a luncheon. The business meeting will take place on the afternoon of August 31, to be followed by the dinner and a dance.

James Fitzgibbons, 141 Halliday Street, Jersey City 4, N. J., is the convention chairman.

### 10th Armored Division Reunion

The First National Convention of the 10th Armored Division Association will be held at the Park Sheraton Hotel in New York City from August 30th to September 1st. For reservations and information, address J. Edwin Grace, 172 Larch Road, Cambridge, Mass.



At Fort Hood, Texas, the 1st Armored Division has provided great assistance to the ROTC students of Texas A & M. Armor students were able to participate in running the Tank Crew Proficiency Course, received valuable critiquing.





U.S. Army Photos

## The 1952 Armor Officer Candidate

*Armor's Officer Candidate School at Fort Knox is turning out leaders for the mobile arm. As a source of opportunity in the branch, it is one element that contributes to branch appeal. Commanders should fill quotas from within the branch if we are to attract the personnel base to insure the future of Armor*

**T**HE Armored School's proving ground for enlisted men who want to become officers is again in full strength operation. The reactivated Armor Officer Candidate Detachment, for the first time since 1946, is enabling qualified enlisted personnel to assume officer status as second lieutenants of Armor—although the World War II predecessors of the 1952 graduates did not have the privilege of wearing the distinctive insignia of the new basic branch.

The arrival of Armor as a co-equal branch with Infantry and Artillery also precluded for the 1952 candidates the problems, the unanswered questions and the duplication that existed in the wartime operation of not only the OCS of the brand-new Armored Force, but also the Mechanized Cavalry and Tank Destroyer

by **L. M. KOHLMEIER, JR.**

OCS's. Armor officer candidate training has not changed though in being a demanding routine designed to pressure the candidate to reveal his fitness and motivation for command, or his lack of these qualities.

The first class of 231 candidates of the Armored Force School who reported in on July 1, 1941, had only 13 weeks to prepare themselves to be tank platoon commanders. Today's Armor officer candidates undergo a 22-week course that incorporates much of the field and practical training particularly in tactics and gunnery that urgency did not permit in 1941.

The current Armor officer candidate program as a whole reflects the interpretation of today's world situation as a lesser emergency than that which the United States faced in July, 1941. The present operational load of the Armor O/C Detachment has been leveled at eleven classes enrolled in the 22-week course, grad-

uating a class every two weeks. The number of entrants to each class now has been stabilized at about 100 candidates, although the first three classes, begun in monthly rather than bi-weekly intervals, were somewhat larger.

After the first World War II Armor OCS class was begun on July 1, 1941, a new class was enrolled every three weeks until a speeded-up schedule with a class starting every week was inaugurated with Class 15 in October, 1942. This pace was maintained until July, 1943, when the frequency of new classes was cut back to every other at the same time that the course was lengthened from 13 to 17 weeks. The 17-week course was maintained until the course was discontinued on September 1, 1946, although frequency of new classes varied with the Army's need for new officers. The wartime OCS reached its peak in January, 1943, with 3,496 candidates divided into 13 candidate companies and 576 cadre. During its

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five years of operation, more than 12,000 second lieutenants were graduated.

The operation of the reactivated officer candidate course has now leveled on a peak load that averages approximately 1,100 candidates enrolled in 11 classes with an attrition rate of 35 to 40 per cent by graduation day. About 200 cadremen are assigned to the Detachment, not including instructor personnel of the previously constituted Armored School Departments, from whom the candidates receive most of their training.

The relatively high attrition rate, compared with the 25 per cent which was normal for the classes during the five years of the wartime course reflects too a less strenuous need for officers now than in 1941-46. Sixty-five per cent of all candidates relieved from the present course thus far were dropped for "lack of motivation," the same reason that led the field during World War II. The motivation heading includes all manner of shortcomings in the individual candidate which reveal his lack of adaptability to the demanding routine of OCS or later, as a combat officer. Candidates are brought before the Officer Candidate Evaluation Board—popularly called "boarding"—for deficiencies in conduct which may range from dishonesty to accumulation of an excessive number of demerits.

The second largest group of OCS reliefs, 16 per cent, has been for reasons of lack of leadership ability, revealed to class tactical officers who subject candidates to minute and constant observation.

Ten per cent of the reliefs have been for physical defects which would hinder the candidates' performance and which were not caught previously. Disciplinary reasons account for 7 per cent, and the last 2 per cent of the reliefs have been because of academic failure.

Academic deficiency was a much more prominent reason for dismissals from the World War II Armor OCS, partly because the shorter course concentrated on academic preparation, leaving little time for practical work in gunnery, tactics and field problems. In the present 22-week course a great deal of time is spent on ranges, tank parks and in the field. Today's Armor candidates are selected by a criterion of demon-

strated qualities of leadership, morality, mental capacity and physical fitness, and during the course they are observed for adaptability, academic proficiency and continuing physical development. In 22 weeks the candidates take five "physical efficiency" tests, and those who score low are brought before the Evaluation Board to determine whether they will continue.

This accent on psychological adaptability to combat stresses, to leadership and to allied physical efficiency is another contributing factor to the currently low standing of reliefs for academic deficiencies.

Today's candidate is also better equipped in educational background than his World War II counterpart to grapple with the academic side of his OCS training. The "average" candidate of the first 12 classes had had 13.57 years of formal education, or traveled up the educational ladder to complete 1½ years of college. The average educational level, however, can be expected to decline, just as the average age of entrants to Armor OCS has declined, with succeeding classes as Selective Service dips into succeeding younger groups of men to fill draft quotas. Of the 1,235 candidates who were enrolled in Classes 1 through 12, 1 per cent have postgraduate college or university credit; 19 per cent possess bachelors degrees; 42 per cent have some college work but did not graduate; and 38 per cent have only high school diplomas to meet the minimum OCS

educational entrance requirement.

The average candidate, again among the entrants to the first twelve Armor OCS classes, was 22.92 years old, although the average age declined steadily from 24.67 years for Class 1 to 21.10 years for Class 12.

The beginning of Class 1 on September 28 of last year posed few problems compared to those adjunct to the arrival of Class 1 in July, 1941 at the brand-new Armored Force School, or those which accompanied the integration of the Cavalry and Tank Destroyer OCS's with the Armored OCS in November of 1944.

The Armored School last summer activated an Officer Candidate Department, since redesignated "Detachment," for administration, house-keeping and teaching miscellaneous subjects, while the bulk of the candidate training was integrated into the schedules of the previously constituted instructional departments—Command and Staff, Weapons, Automotive, and Communications.

The permanent brick barracks on Third Avenue which housed most of the World War II candidates, however, are now occupied by School Troops, and renovation of an area of wooden buildings, north of The Armored School "campus" was necessary to house the new Armor candidate crop. The familiar two-story platoon barracks have been painted and rebuilt with partitions dividing the floor space into two-man cubicles and similar treatment has been given to wartime BOQ area to provide



The OCS is under the eye of top Armor commanders. Gen. White, Armored Center Commander, and Gen. Collier, Armor Inspector, witness the instruction.



quarters and facilities for study. Additional one-story wooden structures in the Detachment area have been refurbished as classrooms.

Detachment commander Colonel William H. Wood is in charge of the 146 hours of instruction out of the course total of 968 hours, which do not properly fall under the other Armored School instructional departments, including drill and command classes, physical training, officer indoctrination, and citizenship and morality.

The Command and Staff Department has the lion's share of the officer candidate instruction—totaling 416 hours. The largest blocks within the Command and Staff total are the 135 hours devoted to armor tactics and 38 hours each to infantry tactics and map and aerial photograph reading. Thirty-two hours are devoted to field training and shorter periods to intelligence, leadership, administration, military law, air operations and logistics.

The Communications Department has 55 hours to teach the candidates the fundamentals of radiotelephone procedure, radio operations and wire communications.

The Weapons Department, allotted 195 hours, devotes 82 of them to small arms, 62 hours to tank gunnery and smaller blocks of hours to matériel and observed fire procedure. The Automotive Department has the candidates for a total of 79 hours, and the remainder of the 968-hour course belongs to the assistant commandant,

during which classes are given in instructor techniques.

Most of the hours in the first four weeks of the 22-week course are given to Command and Staff instruction in principles of war, of the offense and defense, map and aerial photograph reading, tactics, logistics and administration. Instruction in the Automotive Department comes next and is followed by two weeks in the Communication Department. The Weapons Department takes over then, starting with small arms instruction and working up to the tank main guns, with every candidate firing all weapons organic to an armored division. And for the final weeks, the candidates return to Command and Staff for more comprehensive work in armor and infantry tactics.

The 73 hours of Drill and Command and 48 hours of Physical Training administered directly by the Candidate Detachment are interwoven through the daily routine of the 22 weeks. Company or platoon tactical officers supervise these hours, but they are conducted by the candidates. The role of instructor is rotated among candidates during physical training periods, and candidate officers and NCO's are utilized in command positions for drill and command exercises. The first of the weekly command conferences is conducted by company tactical officers, and the candidates are assigned by roster as instructors thereafter.

Although the academic work is the

structural framework of the officer candidate course, stress has been placed on the leadership and combat development and physical fitness necessary to the end product of a combat leader. Through 22 weeks of demanding routine each candidate is subject to minute and constant observation by company tactical officers to determine his adaptability for command responsibilities. The tactical officer must make the candidate aware that he is being watched, but the officer must at the same time dispel any preconceived ideas that the officer's mission is simply to detect weaknesses to eliminate candidates. The candidate must know that he is being judged fairly and impartially and to gain this confidence, the tactical officer must be friendly and helpful, but make known that this approach is an official, not a personal one. Impartial evaluation of candidates is not a simple matter, but experience has shown that the top and the very poor men in the officer's platoon will show themselves in the first few weeks of the course. Therefore, his concern is principally with those in the middle. Tactical officers are advised by the Detachment that, "Although the Army needs qualified officers, the loss of a candidate affects chiefly one individual, whereas the selection of one incompetent officer may be disastrous to many. Final doubts are to be resolved in favor of the service."

The entire course is oriented toward providing opportunities in which candidates will reveal their personal traits to tactical officers. A code of honor, setting standards of conduct for Armor officer candidates, and holding them individually responsible for the integrity of the code, is advertised to new arrivals. Lying, cheating, failure to meet payments due, misconduct in public or any other violation of the code is brought to the attention of an honor committee, made up of one candidate elected from each class. The committee hands over its findings to the Detachment commander for action.

Another part of the premeditated stress under which the candidate either proves himself or is relieved is a rigidly enforced system of discipline. Cadre company commanders and tactical officers assess demerits according to seriousness of the violation of the disciplinary standards. Failure



Candidates use cut-away tank fighting compartments as a part of the instruction in tank gunnery, which they receive from the Weapons Department.





Students devote much time to study hours, with compulsory evening sessions in the first two weeks of the course. These students prepare for examinations.

to cooperate with enlisted men will cost a wayward candidate from 6 to 10 demerits. Use of vulgar or obscene language is worth 10 demerits, failure to salute costs 7, and failure to know his rifle serial number will get the candidate 3 demerits. The unfortunate officer candidate who accumulates a number of demerits in excess of 150 per cent of the class average goes before the Evaluation Board for a decision on whether he will be relieved, turned back to another class, or mend his ways.

Tactical officers have opportunities to observe proficiency and attentiveness in classes and formations, during physical training and the drill and command exercises, but every candidate has his day to demonstrate outstanding command capability—if he possesses or is developing it. A daily roster details the aspirants to commissions to candidate command assignments as candidate company commander, executive officer, first sergeant, platoon leader and sergeant, and assistant platoon sergeant. The candidate who demonstrates outstanding command capabilities as company commander may be excused from further command assignments while the borderline cases are assigned more frequently out of regular sequence. The candidate company commander is entirely responsible for the control and discipline of his company or class. His responsibility is to get the company to the appointed place or class, in correct uniform, at the specified time; to report absentees; to

answer for the conduct of his candidate officers-for-a-day; and to report to each instructor in this manner: "Sir, Candidate Jones, Candidate Company Commander, A Company, reports 90 men present and 1 man absent."

His executive officer renders a similar report to the instructor prior to the arrival of the commander and his company, then reports to the candidate CO when the class arrives, and he assists the candidate in his duties.

The candidate first sergeant orders the company to "fall in." He receives reports from the candidate platoon sergeants and then reports to the candidate company commander and insures that all forms needed during the day by the candidate company officers are available.

And the candidate platoon leader and his candidate noncoms are responsible for platoon control, discipline and appearance just as in any TO&E organization.

A schedule of inspections too contributes to the substance of the demanding routine. The cadre company commander conducts daily inspections of candidate quarters. On Tuesdays, Thursdays, and Saturdays, candidates leave their wall and foot lockers open for inspection, and they stand by for the Saturday morning inspections.

Each candidate is scrutinized throughout the course not only by the cadre CO and tactical officers, but also by his fellow candidates who are required to submit aptitude rat-

ings on other candidates in his platoon. At the end of the 8th, 12th and 16th weeks of the course, the candidate lists members of his platoon in "order of merit," with the man he considers to be the best platoon leader at the top, followed in order by those he thinks have lesser ability. And the candidate must briefly elaborate on the characteristics of his buddies which led to his evaluation. All such records are of course confidential, but they are important to the tactical officer's own evaluation, not only in revealing traits of the candidate evaluator but in disclosing more subtle characteristics of the subject candidate. The "tac" officer utilizes these comments in his own evaluation, only if he can verify them by his own observation. If adverse candidate criticisms are verified, the tactical officer makes known to the offending candidate the observation of his weaknesses, although the origin by another candidate of the criticism is never revealed to the offender.

Normal off-duty hours for the Armor officer candidate are from 1300 Saturday until 1800 Sunday, and if he forgets to sign out, he gets six demerits. Those candidates whose class attains senior status upon the graduation of the preceding class get special privileges such as wearing loops of yellow cloth with the Armored School crest on the epaulets of outer garments, and relaxation of pass restrictions. During the week prior to graduation, the senior candidates inspect junior companies, bed check is suspended for them, and double-timing to classes may be relaxed.

The last formidable obstacle put in the way of candidates is the Armor Military Stakes competition, a test combining practical application of the academic instruction with physical endurance. (Described earlier this year in March-April issue of ARMOR.)

Another situation in which candidates are placed to display their initiative or lack of it is the company council, consisting of one elected representative from each floor of the barracks. The council considers problems affecting the company as a whole, such as dances and other social activities and the class yearbook.

These non-academic parts of the demanding OCS routine, operating within the academic framework, are



the situations of individual strength—or weakness—in which the Army is interested. The aspiring candidate's academic proficiency will be of little avail in combat if as a company or platoon leader, he does not possess the qualities of leadership, adaptability and physical efficiency which made up the total of professional proficiency.

If the candidate is not sincerely aspiring to a commission and to the development of leadership capabilities, lacking the motivation which enables him to come out on top in all the situations where his proficiency is on test—academic and otherwise—he sooner or later comes before the Evaluation Board.

The Officer Candidate Evaluation Board is made up of a president who normally is the detachment deputy director, two members who are the candidate battalion commanders, and a recorder who is the detachment adjutant. The Board meets during the fifth week of a class to relieve or turn back those candidates who have early shown themselves deficient for reasons of discipline, leadership, demerits, or academic and physical progress. Subsequent Board meetings are held on the initiative of company tactical officers whenever these officers have observed and doubt the ability of any candidate to complete the course. Reliefs, as a result of these boardings, are classed as "lack of mo-

tivation." The Board meets 25 days prior to the scheduled graduation of a class to report a tentative list of graduates to The Adjutant General in Washington and turn back any deficient candidates. A final Board is held during the 21st week to determine the graduating list and designate distinguished graduates, if any.

The Board has at its disposal the "order of merit" standing of the candidate, his physical efficiency record and his academic standing. These are worth 45, 5 and 50 per cent respectively in the final over-all standing of the graduating candidate. The company commander enters his candidates' "order of merit" standings six times during the 22 weeks, based on demerits, on the order of merit candidates have assigned to each other, and on the recorded observations of traits, to which numerical values have been assigned, by tactical officers. The company commander's final "order of merit" over-all standing is based on his previous "order of merit" entries and the academic record of the candidate.

Interviews with candidates who have survived to reach senior status indicate they fully recognize the pattern of pressure and the reasons for it and that adaptability is largely responsible for their success. As one candidate replied, "OCS is tough, but combat is tougher."

The 2nd lieutenants of Armor who

are graduated to troop assignments today have already had precedents set for them by the more than 12,000 officers who were graduated in the earlier Armor OCS to fight in World War II. Two were posthumously awarded the Congressional Medal of Honor. Second Lieutenant Raymond Zussman was graduated with Class 16 in 1942 and 2nd Lieutenant Thomas W. Fowler in Class 33 early in 1943.

A few more of the earlier Armor OCS have returned to the new Officer Candidate Detachment as faculty and staff members.

Many of the officers of the 1952 Armor OCS are "alumni" of the World War II OCS at Fort Knox. Major Howard E. Bressler commands one of the two candidate battalions and Major John L. Rees is detachment executive officer. Captain Leroy G. Cewe is operations officer and 1st Lieutenant James W. Lane is adjutant. Among company commanders and tactical officers are Captains Donald Allen, John E. Hansen, Max P. Hutton, Harry McCaffrey, George W. Weidt, and 1st Lieutenant Clarence A. Moore. Other of the detachment officers graduated from Cavalry and Tank Destroyer OCS's before they were combined with the Armored course and six of the tactical officers are graduates of the 1952 Armor OCS.

## NEW TANK GUN RANGE FINDER

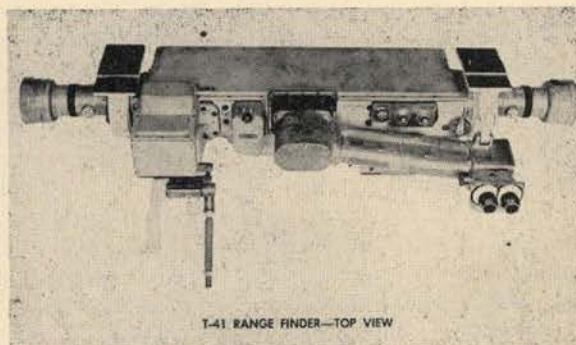
The nation's newest tank gun range finder is being manufactured by the Airtemp Division of Chrysler Corporation, Dayton, O.

This advanced device for use in the M47 medium tank makes it possible for the first time for a tank gunner to zero in on the target and make even his first shot a hit. With the range finder, the tank gunner ranges and continually tracks the target. The range finder automatically applies to the tank gun, data on direction and distance to the target as well as the type of ammunition used.

C. E. Buchholzer, Airtemp president, said the company has received three multi-million dollar orders for the range finder.

"Six months after the fire control divisions of the Army Ordnance Department placed the first one, we began shipment," he said.

Buchholzer pointed out that while the new range finder is a big step forward in fire control instruments, it also represents a production job that involves several techniques with which industry in general has had little previous experience. For example, optical glass in the instrument is bonded directly to metal mounts without mechanical fasteners. Secondly, the entire instrument must be hermetically sealed against atmosphere.



T-41 RANGE FINDER—TOP VIEW

Chrysler

R. J. Schumann, Airtemp factory manager, emphasized that starting the wheels of production for the range finder, a complex example of precision optical, electronic and mechanical systems, entailed much more than converting present plant facilities.

He pointed out that it necessitated over 100 new machine tools and many precision optical checking instruments. It meant rearrangement of the Airtemp plant, hiring and training new employees. To make room for all this a new 76,000 square foot building was added to the plant.



## Federal Recruiting and Drafting in the Civil War

**W**E shall now examine more closely the statistics in respect to the total number of men enlisted during the war for the Federal armies with emphasis on the motivations that prompted them to join the colors and the types of men that went to make up the Federal forces. The aggregate number of men credited to the several calls and put into the service of the Federal army, navy, and marine corps during the period of April 15, 1861 to April 14, 1865, was 2,656,553.<sup>60</sup> This number does not include the 120,000 emergency men who served periods of two or three weeks during the summer of 1863. The figure of 2,656,553 includes every man mustered in the service and does not take into account the fact that the same men in many instances had been discharged and subsequently re-enlisted.<sup>61</sup> It is difficult to arrive at exactness in evaluation of the strength of the Federal army at any one period due to the fact that it was constantly discharging veteran organizations and receiving recruits and entirely new regiments as replacements. The figures for the strength of the army at any given date should be examined accordingly. It is obvious that a three-month regiment, although having more men on its rolls than combat-depleted units had, was not to be compared in efficiency to a three-year regiment which had been at the front through several campaigns. The equivalent number for the figure of 2,656,553, which the Secretary of War gave as total enlistments for the war, would be 1,556,678 based on a term of three years.<sup>62</sup> There was the equivalent of 2,050 regiments in the Federal service during the war. This total includes the Regular Army but excludes the Veteran Reserve Corps.<sup>63</sup>

The Regular Army was the only reliable military entity at the outbreak of the war. Although its commissioned strength was seriously depleted due to so many of its best officers joining the Confederacy, its enlisted personnel remained true to the national government. In the quick, decisive campaign he envisioned in 1861, General Winfield Scott planned to rely solely on regular troops, by means of which he had won his victories in earlier wars. But the Regular Army was too small to defeat an enemy that was to put approximately a million men in the field before cessation of hostilities. Due to various causes that will be enumerated later, the Regular Army never was increased to any substantial degree. Most of the best officers of the war had advantages of West Point training and long experience, the exceptions being relatively few. The function of the Regular Army should have been, and was to some extent, to furnish cadres of officers and non-commissioned personnel to the volunteer army that was to bear the brunt of the fighting. Although many of the commissioned officers were eventually so utilized, the services of the 15,000 privates and noncommissioned officers<sup>64</sup> remaining were not. The latter would have proved valuable as company grade officers and sergeants. General McClellan wished to break up the Regular Army and

distribute its members among the staff and regiments of the volunteer organizations, or if that were not done, at least to build up the Regular Army regiments to their full authorized strength and use them as reserves in critical situations.<sup>65</sup> McClellan's advice was not followed. It is true that there was a grouping of regular regiments into brigades, but nothing more extensive was attempted. Added to the weakness of the Federal government in the administration of recruiting for the Regular Army was the widespread reluctance of civilians to enter the regular service. The reasons for this were many: the fact that enlistment in the Regular Army was for a definite period, while the volunteers were to be discharged at the end of the war, which everybody believed would not last three years; the fact that, although both volunteers and regulars received the same pay, the amount of two dollars per month was withheld from the pay of the regular soldier but not from that of the volunteer; the fact that the States granted bounties to their volunteers and pensions to their volunteers' families, advantages which the regular soldier did not have; and lastly, but not least important, the fact that discipline in the regular units did not appeal to the majority of volunteers.<sup>66</sup>

Those officers who remained with their regular units were discriminated against in comparison with the regular officers who accepted higher rank and responsibility with volunteer organizations. It was commonplace for two West Point officers of the same former regular unit to meet on the field, one of whom might be a divisional or corps commander, the other of whom might still be a lieutenant or captain in their old regular regiment. However, the former received his promotion within the regular service on the same basis as his less fortunate classmate. This is strikingly illustrated in the postwar reorganization of the Regular Army when generals commanding the higher echelons of the army returned to their old regiments as field and company grade officers. Some ambitious officers of the Regular Army at first hesitated to accept higher rank in the volunteers,<sup>67</sup> but others sought brief leaves of absence to visit the governors of their respective States to offer their services. These men were refused leave to accept commissions in State regiments because of General Scott's theory that the Regular Army was to be the main fighting force in the war. Later on, however, the policy of refusing to permit regular officers to accept commissions in the volunteers was changed. The exception to this is to be found in the regular artillery regiments, where there was a preponderance of well-trained Regular Army officers, whose presence enabled that branch to contribute so magnificently to the final Union victory. The regular infantry, on the other hand, was no better than the volunteer infantry due to the fact that the most intelligent, the strongest, the most stable elements refused to join the Regular Army. A large number of foreigners who had no strong State allegiance entered the regular ranks. Also the



lower grades among the subalterns were assigned to young men fresh from civil life; thus some of the old regiments and all the regiments created by the act of July 29, 1861, suffered from the same disadvantages as did the newly formed volunteer regiments. "Nevertheless, the *esprit de corps*, that moral influence which attaches to a word, a number, or a sign, which has the power of transforming men, soon imparted habits of steadiness and discipline to the newcomers, who, after the first combats, rivalled their older brethren in courage and sustained the credit of the regular troops."<sup>68</sup>

At the close of 1862 the Secretary of War appointed a commission to revise the articles of war and army regulations. This commission issued a circular inviting suggestions as to desirable alterations within the military establishment. One of the high-ranking officers so solicited urged in vain the need of giving unity to the army by abolishing the distinction between regulars and volunteers.<sup>69</sup>

### Regular vs. Volunteer

The total number of enlistments for the Regular Army during the war was 67,000.<sup>70</sup> This included a few who enlisted just after the close of the war. At no time during the period of active hostilities did the Regular Army number over 26,000 officers and men.<sup>71</sup> As there were only thirty regiments in the Regular Army, it is apparent that their average numerical strength must have been small, but their losses in action were severe in proportion to their numbers. The Regular Army lost 2,283 killed in action and 3,515 from disease and other causes during the four years of conflict.<sup>72</sup> Desertion was exceptionally high in the Regular Army due, in large part, to the caliber of enlisted men found in the regular regiments. A large proportion of the men in the ranks were foreigners, because native-born citizens went with their States. Whereas 62.51 per thousand deserted from volunteer units, the regulars lost 244.25 per thousand.<sup>73</sup> This is partially accounted for by the fact that honorable discharges were far easier to obtain in the volunteer force than in the Regular Army. The volunteer could use the influence of friends, congressmen, and others while such influence was difficult for the foreigner to obtain. The political interest of the State officials in their volunteer regiments was nonexistent to the regular soldiers, who had no ties except with the Federal government. Honorable discharges were granted at the rate of 67.23 per thousand to volunteers, 15.08 per thousand to the colored troops, and only 17.88 per thousand to the regulars.<sup>74</sup> The proportion of discharges for disability was about the same for volunteers and regulars: 78.81 per thousand for the former and 75.99 for the latter.<sup>75</sup> The better discipline of the Regular Army as compared to that of the volunteers is reflected in the deaths from disease: 42.27 per thousand in the Regular Army but 59.22 per thousand in the volunteers.<sup>76</sup>

It has been necessary to discuss the Regular Army to the extent we have because no complete understanding of the volunteer soldier is complete without a consideration of the source whence he drew many of his regimental and most of his brigade, divisional, corps, and army commanders. The militia, the only other organized military force at the outbreak of the war, is of much less significance, but nevertheless merits attention because of its role

as a reserve force during the war. Generally speaking, before formation of the volunteer army, the militia dominated the scene until after Bull Run and then left the stage except for temporary appearances during invasions of the North by Confederate troops. During the first invasion of Northern soil by the Southern army the governor of Pennsylvania called out 25,000 militia "for service within the state to repel rebel invasion."<sup>77</sup> These troops, which were not mustered into service but were recognized and paid by the United States, were discharged and forwarded to their homes after serving only two weeks. Such was the nature of the militia contribution to the war effort. The militia was not as efficient a training element for officers as had been hoped at the beginning of the war. An act was passed by Congress in 1792 providing for a uniformed militia to be raised in each State which would form a reserve force to be called out in case of invasion or rebellion. However, during the long period of peace the militia organization had been almost wholly neglected. Most of the States had laws for the organization of militia but these laws were little regarded. The commencement of the war found only two or three States with a militia organization sufficiently sound to admit a ready response to the President's proclamation of April 15, 1861. Even those regiments that did respond were filled with volunteers who had no previous training. During the first year of the war most of the States passed militia laws providing for the enrollment of all able-bodied white male citizens (some, for instance Rhode Island and Massachusetts, included colored citizens) between the ages of 18 and 45 with certain specified exceptions. The militia thus organized was divided into two classes, the active and inactive militia.

### The Militia

The active militia included the voluntary companies organized into a given number of regiments and recruited to full strength by a draft from the enrolled men between the ages of 18 and 30. The inactive militia comprised all men between the ages of 30 and 45 who were required under penalty of a dollar fine per year to appear on a specified day to answer to their names. The active militia was fully officered and equipped and was called out once or twice a year for a few days' drill. It had been a prevalent idea among the militiamen that they could not be required to serve outside their State nor could they be retained in Federal service for more than three months. This led to certain militia regiments marching to the rear at the sound of the enemy's cannon during the Bull Run campaign. But the act of July 17, 1862, authorized the President to call out the militia for nine months instead of three. It is impossible to give more than an approximation of the number of militia enrolled though it was probably over 3,000,000 by 1862.<sup>78</sup> Of the 77,875 three-month troops called out in the spring of 1861 a little more than half were militia; of the 30,000 or 40,000 called out in the summer of 1862, all or nearly all were militia. There were also some militia regiments among the nine-month force raised under the call of August 9, 1862.<sup>79</sup>

Some militia regiments offered their services for longer periods and enlisted as a unit in the service of the Federal government. Among these was the famous 55 New York Infantry which filled its vacancies and enlisted in the Fed-



eral service for three years or the war "and the 55th of militia became the 55 volunteers . . ." <sup>80</sup> The militia law, nevertheless, left the men solely in the control of the States until they were sworn in the service of the national government. Thus the appointment of all officers was the privilege of the State and the opportunity was not overlooked in the paying off of political debts to favorites. By the summer of 1863 the military authorities had learned that they must depend on the volunteers, not on the militia, even during invasions of Northern territory. As General-in-Chief Halleck reported November 15, 1863, with reference to the operations of the Gettysburg campaign: "Lee's army was supposed to be advancing against Harrisburg, which was garrisoned by raw militia, upon which little reliance could be placed." <sup>81</sup>

### Volunteers Bear the Brunt

It was the volunteer troops who bore the brunt of the fighting and suffered the losses that made possible the Union victory. Any attempt to analyze the various motivating factors that caused over two million men to enter the military service of the Federal government is impractical. Dealing with exact figures is much easier and more accurate than attempting to evaluate human emotions. In studying letters and diaries of the Civil War period one found that some factors occurred more frequently than others. Certainly one of the most compelling factors was the desire for excitement. This mania to "see something" before the war was over affected the younger elements more than the others and persisted throughout the entire war and was just as strong in one section as in another. Many minors who were refused permission by their parents solved their dilemma by running away and enlisting. <sup>82</sup> Although there were few "boy regiments" or "boy companies" in the Federal army there were thousands of soldiers in the ranks whose recorded ages were sixteen and seventeen. Probably 200,000 recruits overstated their ages a year or more. In Company I, 2 Vermont Infantry, there were ten soldiers who enlisted at seventeen, fourteen who enlisted at eighteen and fourteen who put down their ages as nineteen. <sup>83</sup> Often boys in their teens were prompted to enlist by news that a unit from their State had participated in a great battle and the boys were seized with the desire to emulate their more fortunate friends who were getting all the glory. <sup>84</sup>

In addition to the youth of the country who waited impatiently until they could get their parents' consent to enlist or took matters in their own hands and ran away to join any unit that was available, the majority of the volunteers offered themselves to their country primarily from a sense of duty. In the North there was very little enthusiastic sentiment about military life, especially in the Eastern and Middle States. It is true that the West responded with more unanimity and probably with more alacrity to the often repeated summonses to leave peaceful pursuits and take the field. This was due rather to the comparative newness of the civilization in the West than to any specific martial quality in the population. The truth is that the Northern people were busy, preoccupied, full of schemes for the development of the country. The poetry of war hardly entered the mind of the Northern volunteer whose course was determined by a sense of duty. He regarded the Southerners as completely to blame and was deter-

mined to put them down, cost what it might. The war was all weary work to him, a distasteful job that had to be done, "a sort of anachronism." <sup>85</sup>

The history of recruiting during the Civil War is the story of a steadily decreasing willingness on the part of the North to offer freely its manpower as soldiers and a resulting steady increase in the necessity for inducements to overcome that unwillingness. From the beginning of the war the press and pulpit played their parts in prodding the laggards, while in town meetings and "rallies" local orators proclaimed undying devotion to the Union. One soldier who reacted favorably to a politician's harangue later observed that although the speaker to whom he listened declared that life must be cheapened, the effusive orator never "helped on the work experimentally." <sup>86</sup> Up to the commencement of drafting the recruiting of troops was either by individual or group enlistments. In the case of individuals enlisting it was often necessary for them to join a regiment from another county or even State; especially was this true in the early months of the war when the Federal government was not accepting many of the regiments already formed. Group enlistments functioned as follows: a group of men would go in a body to some recruiting station and signify their readiness to enlist in a certain regiment provided a designated member of their number should be commissioned captain. That the war was unnecessarily prolonged because of the "town meeting" attitude there can be no doubt.

### Way to a Commission

In 1861 it was common for someone who had been in the Regular Army or militia, or who had served with a volunteer unit in the Mexican War, to take the initiative in recruiting for his district and circulate an enlistment paper for signatures. Because of his active interest, his chances were pretty good to obtain a commission as captain; men who had materially assisted him in his work would secure lieutenantcies. On the return of the three-month troops some of the companies immediately re-enlisted in a body for three years, sometimes under their old officers. In 1862 the recruiting offices increased greatly in number and functioned in processing recruits both for old units already in the field and for new organizations. Unquestionably at this time the latter were more popular. The lot of a recruit in an old company was, at the best, not an enviable one, and sometimes was made very disagreeable, because of the large bounty the recruit received, amounting in some cases to a thousand dollars. <sup>87</sup> Later on in the war when the notorious "bounty jumper" made his appearance in the ranks of the veteran regiments and openly boasted that Uncle Sam would never get him to the front, the superior tolerance of the veteran toward the recruit turned into bitter hatred and disgust. <sup>88</sup>

Flaming advertisements and billboard posters were used with considerable effect in getting the men to the recruiting stations. One such poster for the purpose of getting recruits for a regiment already in the field informed the prospective soldiers that although "the regiment [2 Massachusetts Infantry] is second in number [it] is second to none in regard to discipline and efficiency, and is in the healthiest and most delightful country." <sup>89</sup> War meetings, held indoors or outdoors according to the clemency of the weather, were used to stir lagging enthusiasm. Often



bands and choirs regaled the audience with "Red, White, and Blue" and "Rally 'round the Flag." Veterans of 1812 and 1848 were called upon to urge the younger men to give themselves to the cause. Often there was a patriotic maiden lady who kept a flag or a handkerchief waving declaring she "would go in a minute if she was a man." In addition there was usually a man who would make one of fifty (or some other safe number) to enlist, when he well understood that such a number could not be obtained. Often there was one present who, when challenged to sign the enlistment roll would agree to do so, if certain wealthy men would put down their names.<sup>90</sup> There were many amusing repercussions from the blatant patriotism of some of the orators at these war meetings when later on they were called upon to fulfill their promises of heroic conduct on the battlefield. Illustrative of the many incidents of this sort was that of the man who, by virtue of his promise "to be found where the bullets were thickest" was elected captain of his company. His promise was literally fulfilled, for during the first engagement of his regiment he was found hiding under an ammunition chest.<sup>91</sup> Despite the name-calling and town politics prevalent in many of these meetings, they were usually a success and once the first man had signed the enlistment roll, he would be followed by others. Often toward the end of the meeting a stampede would set in to fill the town's quota. Local pride played a large part in filling the ranks of the army prior to the enrollment act of March 3, 1863. The strenuous efforts made by the towns, cities, and States to fill their quotas plus the very liberal bounties offered by the various localities were effective enough so that there was very little drafting before the spring of 1863. Up to February 1, 1863, there were probably not more than 10,000 drafted men in the army.<sup>92</sup>

#### Physical Examination

After the enlistment roll had been filled in sufficiently for the town quota, a local physician conducted the medical examination of the recruits. In too many cases this examination was a mere formality. The men who passed were then taken to a recruiting station where they signed the roll of the company or regiment into which they were going. This roll included a description of the men as to height, complexion and occupation. A guard then conducted them to the examining surgeon, who was detailed for the purpose by the War Department. The surgeon examined the volunteers for dissimulated or concealed diseases; after the draft was in operation, however, he had to detect simulated or feigned diseases and ailments. Because of the general enthusiasm early in the war, large numbers of men entered the ranks with concealed infirmities which early required their discharge.<sup>93</sup> Under the volunteer system large numbers of boys from fourteen to eighteen years of age, immature and feeble, were admitted into the volunteer regiments, with the result that soon they found their way into the hospitals. Equally unfit for active duty were many men of advanced age, some of sixty years and upwards.<sup>94</sup> Of the men accepted in the years 1861 and 1862, a large part, nearly 200,000, were soon found to be unfit for service and were discharged.<sup>95</sup>

In 1863 the requirements for enlistment were made much more stringent. The minimum age was 18; the maximum age was 45. No man was to be accepted under

the height of 5 feet 3 inches and although there was no maximum limit the rule of practice was for the examining surgeon to reject very tall men (6 feet 3 inches and up), especially those whose chests were narrow and contracted, whose muscular systems were imperfectly developed, and who betrayed a tendency to hernia or to a varicose condition of the veins. The weight extremes were set at 110 and 220 pounds.<sup>96</sup> Due to the use of the paper cartridge which required being torn open by the teeth before use in the musket, men were rejected who lacked a "sufficient number" for that purpose. In most respects the physical requirements for enlistment were substantially as they are today. Disqualifying mental infirmities were: manifest imbecility or insanity, senile dementia, monomania, and melancholia. Men convicted of a felony were disqualified by the regulations, as were habitual drunkards and men with venereal diseases.<sup>97</sup>

#### The Oath

The volunteer was required to sign a "volunteer enlistment" form in which he declared his desire to serve for a specified period of time. This form was signed by the examining surgeon who certified, on honor, that he had carefully examined the volunteer and that in his opinion he was "free from all bodily defects and mental infirmity which might disqualify him from performing the duties of a soldier."<sup>98</sup> The recruiting officer likewise certified on honor that he had "minutely inspected" the volunteer and that he was "entirely sober when enlisted," of lawful age and qualified to perform the duties of a soldier.<sup>99</sup> The volunteer enlistment form also provided for the father's consent in case the volunteer was a minor. No later than six days after enlistment the soldier took the oath of allegiance, which could be administered by a civil magistrate or an officer of the Regular Army, but preferably by the latter.<sup>100</sup> The oath was as follows:

I, A—B—, do solemnly swear or affirm (as the case may be) that I will bear true allegiance to the United States of America, and that I will serve them honestly and faithfully against all their enemies or opposers whatsoever, and observe and obey the orders of the President of the United States, and the orders of the officers appointed over me, according to the rules and articles for the government of the armies of the United States.<sup>101</sup>

In the case of men joining old regiments the oath was administered them and they were sent at once to join their units in the field. Hundreds of the men who enlisted under the call issued by President Lincoln on July 2, 1862, were killed or wounded before they had been in the field a week. On the other hand, the new regiments were usually kept in their camps for several weeks before being sent to the front. A committee appointed by the Secretary of War examined more than 200 regiments during September and October, 1861, and discovered that the average time occupied in recruiting each of these regiments was six weeks.<sup>102</sup> Often the new regiments were mustered in as a unit and all the men took the oath of allegiance together. After muster-in the men were trained in their camp until the regiment was forwarded to the seat of war. When one-half a company had been mustered into service, the first lieutenant thereof could also be mustered in; and when the organization of the company was completed, the captain and second lieutenant could be mustered in.<sup>103</sup> The major was mustered in after the muster of six companies; and



lieutenant colonel after the muster of four companies; but the colonel, chaplain, surgeon, adjutant, assistant surgeon and quartermaster had to wait until the entire regiment was mustered in.<sup>104</sup> Aliens were not required to take the oath of allegiance to the government because it conflicted "with the duty they owe to their own sovereigns," but military commanders were directed to adopt, "in lieu thereof . . . such other restraints of the character indicated as they shall find necessary, convenient, and effectual, for the public safety."<sup>105</sup>

The almost complete collapse of morale in the first three months of 1863 was due to the military disasters incurred in the Peninsular Campaign, in the Second Bull Run Campaign and at Fredericksburg. Civilians and soldiers alike were affected. Desertion in the Federal army was rife and volunteering came to a standstill. By March, 1863, nearly 400,000 recruits were required to bring the regiments up to the legal and necessary standard.<sup>106</sup> The military disasters had been followed by an equally demoralizing inactivity; the safety of the country depended on a speedy and continued re-enforcement of the army. In addition to the casualties of war and the extraordinary rate of desertion was the loss of thousands of men whose terms of service had expired. The enrollment act of March 3, 1863 was passed to provide a complete inventory of the military resources of the North in men. This act provided for the appointment of James B. Fry as Provost Marshal General and under his leadership the draft was put into operation and continued to function to the end of the war. The office of Provost Marshal General was charged with the duties of arresting deserters, enrolling the national forces for draft, and enlisting soldiers.

The mode of drafting men was quite similar to that employed in later American wars. Advance public notice of the draft appeared in the local newspapers and civil officers and prominent individuals were invited to be present. A wheel or box was used containing slips of paper with the name of each prospective soldier and his district written thereon. A man, blindfolded, continued to draw out slips until the quota of the district was completed. Then the same drawing would take place for the next district.

#### The Enrollment Act

The enrollment act was to include "all able-bodied male citizens of the United States, and residents of foreign birth who had declared on oath their intention to become citizens between the age of twenty and forty-five years."<sup>107</sup> There were two classes of men liable to draft: the first class included all men between the ages of 20 and 35 and all unmarried persons above the age of 35 and below 45; the second class included all married persons between the ages of 35 and 45.<sup>108</sup> Drafted men were given the regulation physical examination and appeared before a board of enrollment which consisted of the provost marshal, a commissioner and surgeon. Each man was examined separately. The board then asked the drafted man his name, age, residence, and whether he claimed exemption. If held to serve he was then asked whether he desired to send a substitute, and if so, what extension of time he desired.

When a sufficient number of men had accumulated at the draft rendezvous they were forwarded under guard to

the general rendezvous. It may be said that generally the quality of draftees was extremely low. It will be seen when we discuss the Union soldier in combat that the average drafted man was not only of no earthly use to the regiment he joined but was actually a definite liability.

The continuance of the Federal armies in the field depended not only on insuring a continual supply of replacements by draft but also on re-enlisting those well-trained veterans already in the field, many of whose terms of service were about to expire. To accomplish the latter the War Department issued a general order<sup>109</sup> June 25, 1863, which permitted the volunteers already in the service to re-enlist for a period of three years or the war. A furlough of at least thirty days was granted to officers and men of the organizations re-enlisting under this order. Where a large proportion re-enlisted the regiment was sent home in a body at government expense and during its stay re-organized and recruited its ranks. Every soldier received a bounty of four hundred dollars for re-enlisting under this plan and he retained this amount even though the government did not require his services for the complete three years. The date of rank for the officers was made continuous from the date of original muster. The force thus reorganized was termed "veteran volunteers" and, as an honorable distinction, service chevrons were authorized for it by the War Department.<sup>110</sup>

#### Re-enlistment

The reason that some regiments re-enlisted almost in a body while others had very few men "sign over" is difficult to ascertain. Local conditions were responsible in many of the units. For example, the 6 Connecticut Infantry left the Petersburg front for home with very few re-enlistments, due, in large part, to war weariness.<sup>111</sup> The 2 New Hampshire Infantry was a fighting regiment, but when it received worthless conscripts as replacements it resented their presence so much that few cared to serve out the war with these new men.<sup>112</sup> On the other hand, regiments with high morale usually re-enlisted because there was great pride in preserving the regimental organization. In one regiment in the Western theater there were only fifteen men who did not re-enlist and these were the physically disabled and malcontents.<sup>113</sup> If a regiment had a popular colonel it would very often follow his urging and "see the thing through" because of confidence in him.<sup>114</sup> In some units the feeling against those men who refused to re-enlist was quite strong and in the 25 Indiana Infantry, at least, they were termed "rounders" as a title of opprobrium.<sup>115</sup> Over 136,000 veterans re-enlisted, however, and their contribution to the defeat of the South may be considered decisive. Organizations which would have been lost to the service were preserved and recruited. Capable and experienced officers were retained in command. "The force thus organized and retained . . . performed an essential part in the great campaign of 1864, and its importance to the Country cannot be overestimated."<sup>116</sup> All recruiting and enlisting of volunteers ceased April 29, 1865.<sup>117</sup>

An analysis of the racial composition of the Federal army is extremely difficult to make due to inadequacies of the national government records. An attempt was made shortly after the war but was reluctantly abandoned due to lack of an adequate clerical force and a different system of returns from that employed during the war.<sup>118</sup> Unques-



tionably there were hundreds of thousands of foreigners in the Federal ranks. This is readily understood when one examines the census figures of the forty years preceding the war. During those four decades immigration from Europe, but more especially from England, Ireland, and Germany, was heavy. The following table tells the result of famine and revolution in those countries more graphically than words:<sup>119</sup>

Country Where Born	Number of Immigrants	Years
England . . . . .	302,665	1820 to 1860
	247,125	1841 to 1850
	32,092	1851 to 1860
Ireland . . . . .	967,366	1820 to 1860
	162,332	1841 to 1850
	748,740	1851 to 1860
Germany . . . . .	1,486,044	1820 to 1860
	422,477	1841 to 1850
	907,780	1851 to 1860

During the war the "American Emigrant Company" imported both skilled and unskilled laborers upon order of employers who advanced the necessary travel expenses and who paid a small commission for the service. These immigrants were under a contract to work for these employers. When substitute brokers were able to lure the newly arrived foreigners into military service, the employers immediately countermanded orders already made for more immigrants. In other words, the emigration company was sincerely interested in functioning as a provider of labor for Northern industry. A bill was submitted in the Senate by John Sherman which had as its purpose the prevention of enlistment of newly arrived immigrants.<sup>120</sup> It was also proposed that any immigrant who broke his contract for repayment of emigration expenses would be liable for double the amount that should remain unpaid of these expenses, and if such money were not paid it would be the duty of the person, or persons, who enlisted him in the Federal service to make such payment. By a Senate resolution adopted May 24, 1864,<sup>121</sup> the President was requested to state:

If any authority has been give any one, either in this country or elsewhere, to obtain recruits in Ireland and Canada for our army or navy; and whether any such recruits have been obtained, or whether to the knowledge of the Government, Irishmen or Canadians have been induced to emigrate to this Country in order to be recruited; and if so, what measure, if any, has been adopted in order to arrest such conduct.

Lincoln referred this resolution to the Secretary of State who replied that no authority to recruit abroad had been given by the government and that applications for such authority had been invariably rejected. He admitted that the Federal army included not only Canadians and Irishmen but also many subjects of continental European powers, maintaining, however, that these persons were voluntary immigrants into the North and had enlisted after their arrival of their own accord.<sup>122</sup> In considering the efficiency of the Federal soldier as a combat man one must not confuse these foreigners with native-born Americans. Although many foreigners fought well and many native Americans did not, the majority of foreigners in the Federal ranks were worthless. Army officers of both sides

and thousands of disgusted enlisted men corroborated Meade when he alluded to the "worthless foreigners, who are daily deserting to the enemy," and Breckinridge when he spoke of the men, "chiefly foreigners" who had come into his lines.<sup>123</sup> It was inevitable that a force as large as the Federal army would include practically every race and nationality. Although the effort to enlist Mexicans was just as much a failure for the North as it was for the South,<sup>124</sup> the effort to secure the services of American Indians was somewhat more successful and 3,530 were enlisted, of whom 1,018 gave their lives.<sup>125</sup> At least one Oriental served in the Federal army.<sup>126</sup> During the war there were enlisted 186,097 colored troops,<sup>127</sup> of whom 2,532 were killed or died of wounds.<sup>128</sup> The proportion of officers, all of whom were white, who were killed in action while serving in colored regiments was considerably higher than among the colored enlisted men. To the list of certain qualities that tended to reduce the chances of the Negro to develop into a good combat soldier, must be added the fact that the quality of Negro obtained was often not the best. Substitute brokers did not hesitate to procure the services of colored men confined in jails within the national capital itself.<sup>129</sup> When it was obvious to the majority of the Southern soldiers that theirs was a hopeless cause, numbers of them deserted and were enlisted into the Federal service.<sup>130</sup> These men were, in most cases, sent West to fight Indians.<sup>131</sup>

### Cosmopolitan Army

Despite the observations of many Southern writers and foreigners, especially English, who were inimical to the Northern cause, the oft-repeated assertion that the Federal army was composed in the main of Hessians, Irishmen and Negroes is unfair and false. The muster rolls stated the birthplaces of the men. From these rolls it appears that, in round numbers, out of 2,000,000 men, three-fourths were native Americans. Of these 2,000,000 soldiers Germany furnished 175,000; Ireland, 150,000; England, 50,000; British America, 50,000; other countries, 75,000.<sup>132</sup> The Committee of Inquiry,<sup>133</sup> appointed by the Secretary of War June 9, 1861, discovered that of the 200 regiments it inspected in September and October of 1861, the New England States furnished 37, the Western States 62, and the Middle States 101. In 76.5% of these regiments native Americans were found to constitute the majority; in 6.5% the majority of men were Germans; in 5.5% the majority were Irish, and in 5.5% the regiments were half foreign and half native-born. Although admitting that its findings were not conclusive, the committee considered it to be near the truth to state that about two-thirds of the volunteer soldiers were American born, and nine-tenths citizens, educated under the laws of the Union and in the English tongue.<sup>134</sup> This committee investigated these regiments in the first year of the war, but its findings are indicative of the composition of those regiments which, enlisting with sincere patriotism in 1861 and 1862, kept their patriotism throughout the long, bitter struggle that followed. These men fought and won the war. The colored troops were comparatively few in number; only a few regiments were brought into action at all and their losses were negligible. The "average" Federal soldier was: race, white; nationality, native-born; age, 25;<sup>135</sup> height, 5 feet 8¼ inches;<sup>136</sup> and weight, 143½ pounds.<sup>137</sup>



60. *Ibid.*, 31.
61. *Ibid.* (Livermore gives the enlistments as 2,898,304 but includes some militia who were never mustered into the United States service. Livermore, 1.)
62. Livermore, 50.
63. Phisterer, 23. The Veteran Reserve Corps will be discussed later on in this paper.
64. *Official Records*, Third series, I, 22.
65. Shannon, I, 155, citing McClellan, *McClellan's Own Story*, 97.
66. Comte de Paris, I, 287-288.
- Another foreign observer with the Union Army in 1862 said of the volunteer: "La plupart du temps . . . le chef est un camarade; seulement il porte un autre costume. On lui obéit dans la routine de tous les jours, mais volontairement . . . Cela est si vrai que, bien la paie et le temps de service soient les memes pour les volontaires et les réguliers, le recrutement de ces derniers est devenu à peu près impossible. Toute la classe d'hommes qui s'engageait pour l'armée lorsqu'il n'y avait qu'elle, par goût de la vie des camps, passe aujourd'hui dans les volontaires. D'un côté la licence, de l'autre la discipline: le choix est vite fait." Trognon (Le Prince de Joinville), *Campagne de L'Armée du Potomac*, 8-9.
67. William Tecumseh Sherman in writing to his brother John Sherman on May 22, 1861, said: "I shall promptly accept the colonelcy [of a new regular regiment] when received and I think I can organize and prepare a regiment as quick as anybody. I prefer this to a Brigadier in the militia for I have no political ambition, and have very naturally more confidence in Regulars than Militia." Thorndike, ed., *The Sherman Letters*, 121.
68. Comte de Paris, I, 289.
69. Cox, *Military Reminiscences of the Civil War*, I, 438-440.
70. Fox, *Regimental Losses in the American Civil War*, 527-528.
71. *Ibid.* This includes both present and absent.
72. *Ibid.*
73. Report of the Provost Marshal General, *House Executive Documents*, 39 Cong., 1 Sess., Document 1, 76-77.
74. *Ibid.*, 77.
75. *Ibid.*, 76-77.
76. *Ibid.*
77. *Ibid.*, 53.
78. *American Annual Cyclopaedia and Register of Important Events of the Year 1862*, II, 27. (Hereafter, this work will be cited as *Annual Cyclopaedia*.)
79. *Ibid.*
80. De Trobriand, *Quatre Ans de Campagnes a L'Armée du Potomac*, I, 76.
81. Report of the General-in-Chief, November 15, 1863, *House Executive Documents*, 38 Cong., 1 Sess., Document 1, 19.
82. Boys of this type were to be found in every unit. "The war fever seized me in 1863. All the Summer and Fall I had fretted and burned to be off. That winter, and before I was sixteen years old, I ran away from my father's . . . farm . . . and enlisted in the Eleventh New York Battery, then at the front in Virginia. . . ." Wilkeson, *Recollections of a Private Soldier in the Army of the Potomac*, 1.
83. Kilmer, "Boys in the Union Army," *The Century Illustrated Monthly Magazine*, LXX (June 1905), 269-270.
84. Such was the case with 97 Iowa youths who enlisted after hearing of the part played by the 1 Iowa Infantry at Wilson's Creek. The average age of the 97 was less than twenty years. Clark, ed., *Downing's Civil War Diary*, 3-4. Downing was in Co. E, 11 Iowa Infantry.
85. Ropes, *The Story of the Civil War*, I, 105-106.
86. Goss, "Recollections of a Private," *Battles and Leaders*, I, 149.
87. Billings, *Hardtack and Coffee*, 202.
88. Blanding, *In the Defenses of Washington*, 6.
89. Billings, 37.
90. *Ibid.*, 38.
91. Related to the author by color sergeant Francis H. Buffum, Co. F, 14 New Hampshire Infantry.
92. *Annual Cyclopaedia*, 1863, III, 18.
93. *Official Records*, First series, V, 82. In his report covering the period August 1861, to March 17, 1862, the medical director of the Army of the Potomac said in part: "It seemed as if the army called out to defend the life of the nation had been made use of as a grand eleemosynary institution for the reception of the aged and infirm, the blind, and the deaf, where they might be housed, fed, paid, clothed, and pensioned, and their townships relieved of the burden of their support."
94. Bartholow, *A Manual of Instructions for Enlisting and Discharging soldiers*, *passim*.
95. Report of Secretary of War, *House Executive Documents*, 38 Cong., 2 Sess., Document 83, 55.
96. Bartholow, 34-54.
97. *Ibid.*, 16-24.
98. Billings, 200.
99. *Ibid.*
100. United States War Department, "General Order No. 61," August 19, 1861, *General Orders Affecting the Volunteer Force* 1861, 27.
101. United States War Department, *Revised Regulations for the Army of the United States*, 1861, Section 935, 131.
102. *Annual Cyclopaedia*, 1861, I, 37.
103. United States War Department, "General Order No. 61," August 19, 1861, *General Orders for 1861*, 27.
104. *Ibid.*, 28.
105. United States War Department, "General Order No. 82," July 21, 1862, *General Orders for 1862*, 58-59.
106. Report of the Provost Marshal General, *House Executive Documents*, 39 Cong., 1 Sess., Document 1, 1.
107. *Ibid.*, 54.
108. *Ibid.*
109. United States War Department, "General Order No. 191," June 25, 1863.
110. Report of Provost Marshal General, *House Executive Documents*, 39 Cong., 1 Sess., Document 1, 57.
111. Entry for September 12, 1864, Diary of Frederick Stearns, Co. L, 1 New York Engineers, Manuscript in author's possession.
112. Haynes, *A History of the Second Regiment New Hampshire Volunteer Infantry in the War of the Rebellion*, 206-207.
113. Cox, II, 92.
114. Entry for February 2, 1865, Diary of 1st Lt. Frederick Frank, Co. K, 11 Indiana Infantry, Manuscript in author's possession.
115. "Editor's Drawer," *Harper's New Monthly Magazine*, XXX (December, 1864), 128.
116. Report of the Provost Marshal General, *House Executive Documents*, 39 Cong., 1 Sess., Document 1, Appendix to Secretary of War's report, Part II, 58.
117. *Ibid.*, 127.
118. Barnes, ed., *The Medical and Surgical History of the War of the Rebellion*, Part I, Medical History I, XXII.
119. Kennedy, *House Executive Documents*, 37 Cong., 2 Sess., Document 116, 18. This is the "Preliminary Report on the Eighth Census."
120. *Senate Miscellaneous Documents*, 38 Cong., 2 Sess., Document 13, 6-7.
121. *Annual Cyclopaedia*, 1865, V, 35.
122. *Ibid.*, 36.
123. This phase of the Civil War has been admirably covered by Ella Lonn in her *Desertion During the Civil War*. The citation here is from this book, 138.
124. *Ibid.*, 139.
125. Fox, *Regimental Losses in the American Civil War*, 533.
126. Page, *History of the Fourteenth Regiment Connecticut Vol. Infantry*, 131. Since this man, a Chinese, bore the name of Joseph Pierce, there may well have been others.
127. Phisterer, 11.
128. *Ibid.*, 69.
129. *House Reports*, 38 Cong., 2 Sess., Report 23, 1-11.
130. *Official Records*, Third series, IV, 1232; also Second series, VI, 808.
131. *Ibid.*, First series, XLI, Part 2, 465; XLVIII, Part 1, 455.
132. Fox, 62.
133. *Annual Cyclopaedia*, 1861, I, 37.
134. *Ibid.* That this proportion of native-born volunteers may even be greater is suggested in the fact that the United States Census of 1890 showed that 82% of all surviving Union veterans were native-born and 18% foreign-born. John Bigelow, Jr., *Campaign of Chancellorsville*, 17.
135. Fox, 62. The mean age of all the soldiers was 25 years. "When classed by ages, the largest class is that of 18 years, from which the classes decrease regularly to that of 45 years, beyond which age no enlistment was received. [This is not correct. The writer's grandfather and great-grandfather enlisted in the same company; the son was 18 years old, the father 49 years old at enlistment. There were many such cases.] Of 1,012,273 recorded ages taken from the rolls, there were 133,475 at 18 years; 90,215 at 19 years and so on. The number at 25 years of age was 46,626; and at 44 years, 16,070." *Ibid.*
136. *Ibid.* "The general average would have been greater had it not included the measurements of recruits from 17 to 20 years of age, who evidently had not attained their full stature when their measurement was recorded." The tallest man, a captain in the 27 Indiana Infantry was 6 feet 10½ inches in height; the shortest was a soldier in the 192 Ohio Infantry, who, at 24 years of age, was only 40 inches tall. In both cases the regimental commanders attested to the ability of these two extremes to endure fatigue. *Ibid.*
137. *Ibid.*



# HOW WOULD YOU DO IT?

## DISMOUNTED METHODS OF ATTACK

AN ARMORED SCHOOL PRESENTATION

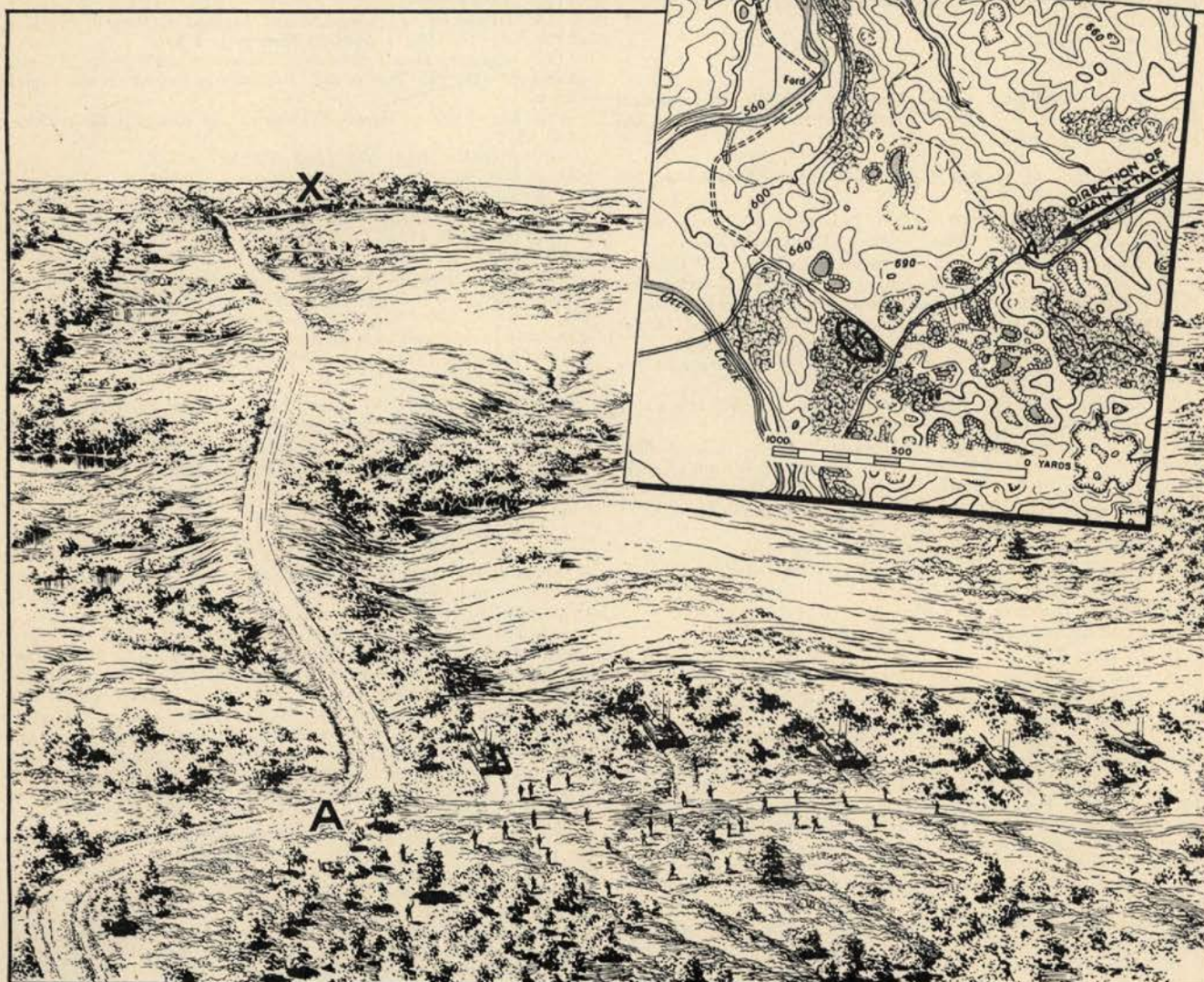
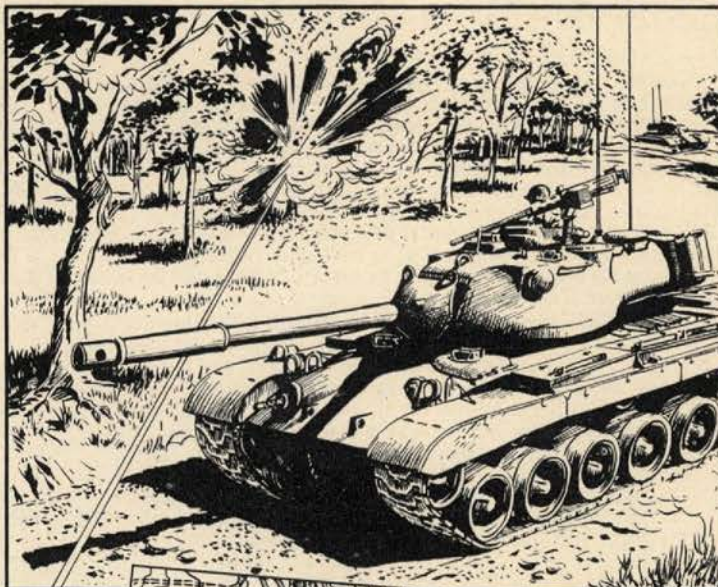
AUTHORS: CAPT G E KIMBALL & CAPT D D CLORE

ARTIST: M SGT W M CONN

**SITUATION A.** Your tank platoon, reinforced with an armored infantry platoon, less carriers, is acting as advance guard for a reinforced tank company. Your mission is to seize a crossing over OTTER CREEK. As your lead tank reaches point A, it is fired upon by antitank guns from the woods at point X. You deploy your platoon to the right and engage the antitank guns by fire. You realize that in order to accomplish your mission, you must first reduce the antitank guns.

From the map and sketch below, which of the five basic dismounted methods of attack would you employ?

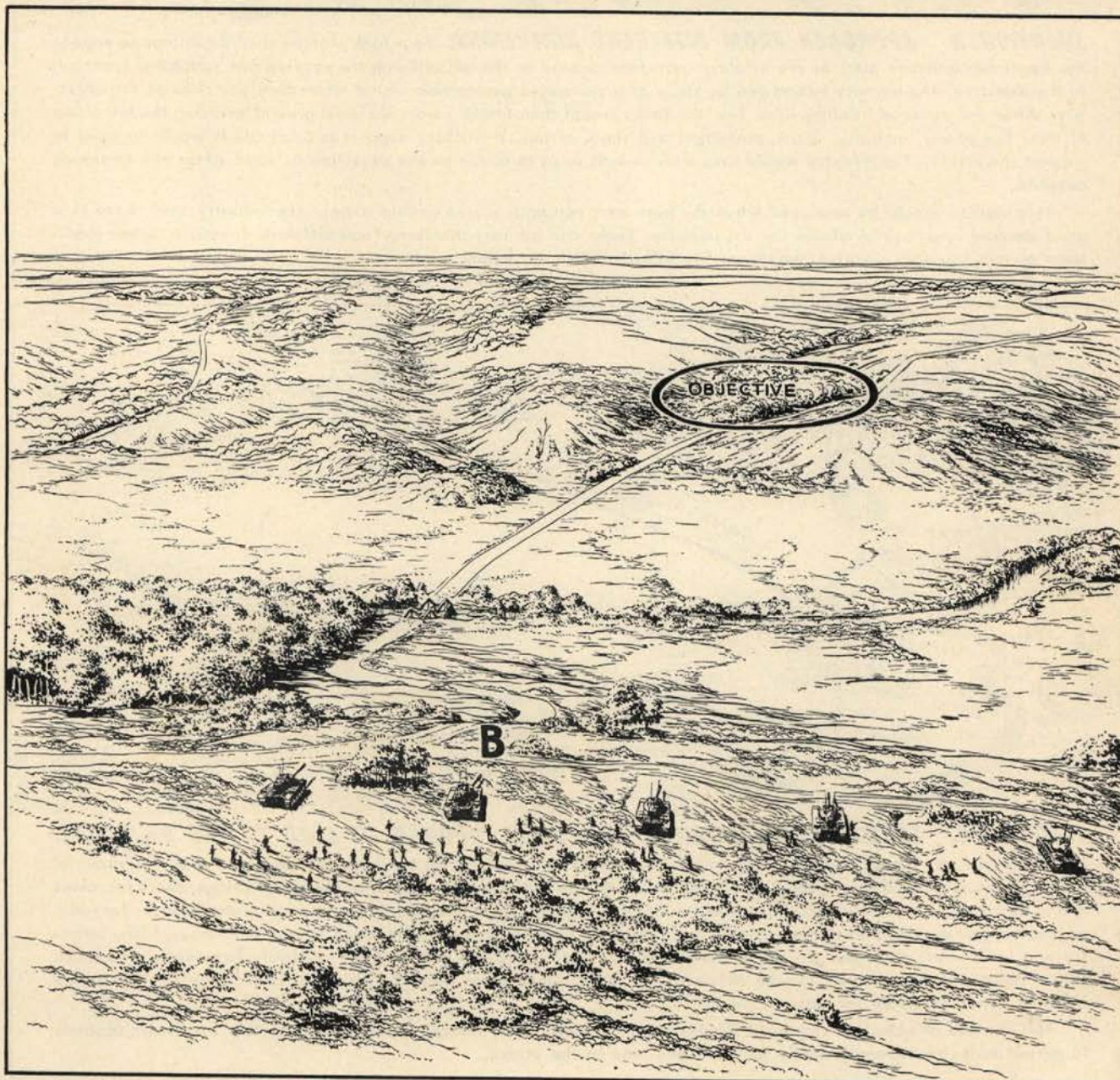
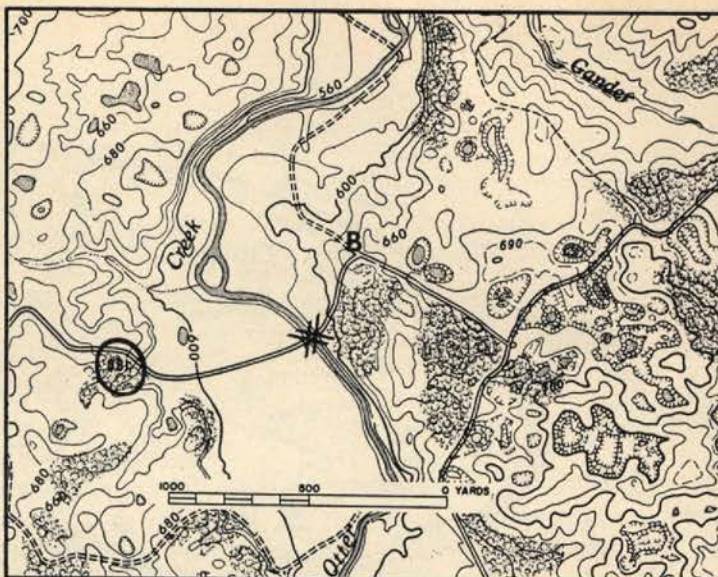
1. Infantry ride tanks.
2. Tanks follow infantry and pass through to lead as the two closely approach the objective.
3. Tanks and infantry approach the objective from different directions.
4. Infantry and tanks move together.
5. Tanks overwatch infantry.



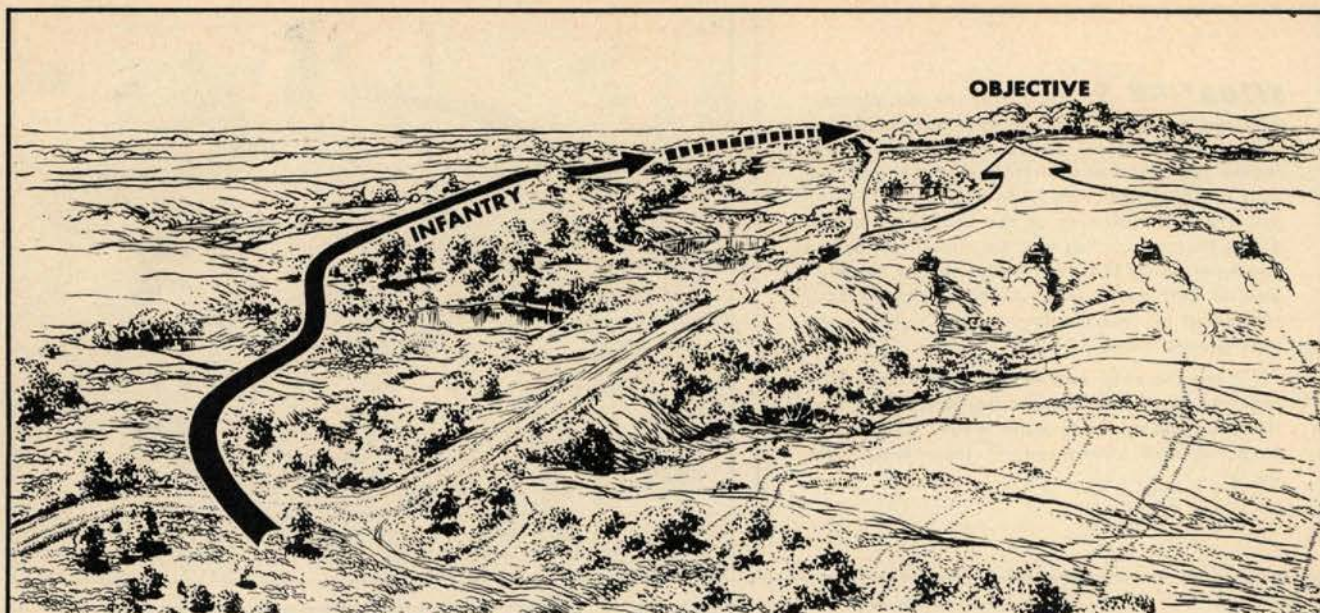


**SITUATION B.** Your reinforced platoon destroys the Aggressor antitank guns and continues on its mission. Your company commander radios you that Army aircraft report the bridge over OTTER CREEK has been blown and enemy activity in the vicinity of the bridge would indicate the approaches may be mined. He orders you to cross OTTER CREEK and secure the high ground 800 yards west of the bridge. Your reinforced platoon deploys to the right on the high ground at point B.

From the map and sketch below, which of the five basic dismounted methods of attack listed on the opposite page would you employ to accomplish your mission? How would you do it?

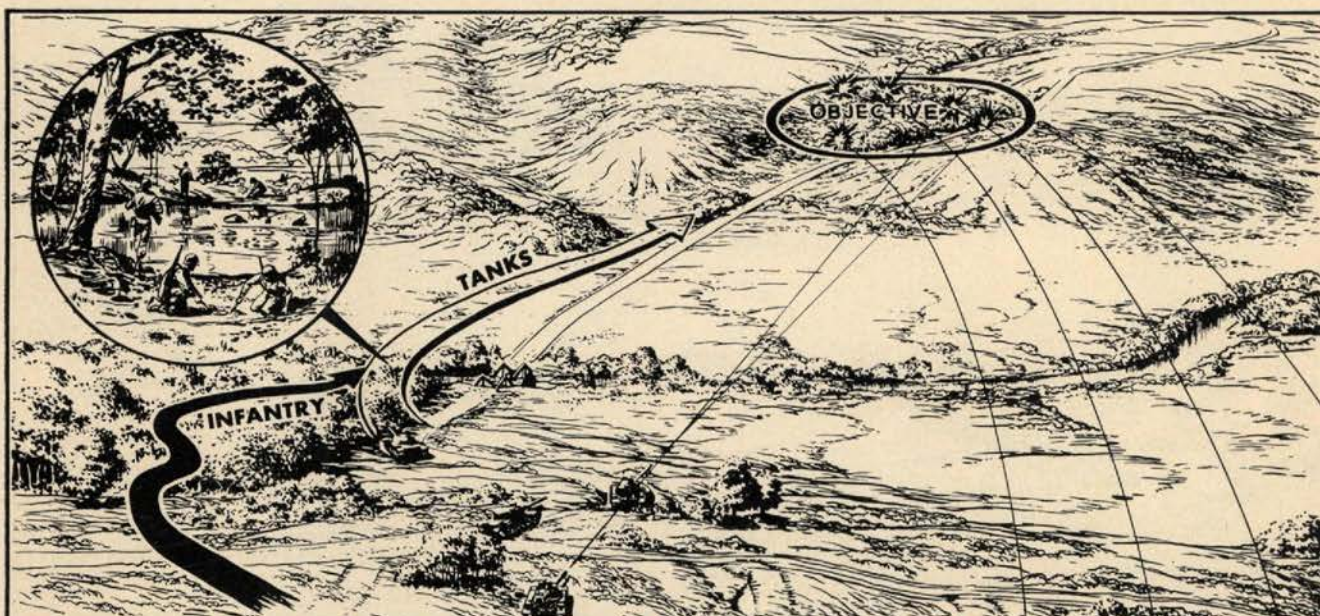






**SOLUTION A. APPROACH FROM DIFFERENT DIRECTIONS.** Your tank platoon should continue to engage the Aggressor antitank guns as the infantry maneuver around to the left utilizing the covered and concealed approach to the objective. The infantry inform you by radio or prearranged pyrotechnic signal when they are close to the objective. After the armored infantry open fire, the tanks would then attack across the open ground, utilizing the full effect of their fire power, mobility, armor protection and shock action. If artillery support is available it would be used to support the attack. The infantry would time their assault so as to arrive on the objective as soon after the tanks as possible.

This method should be employed when the best tank approach would unduly expose the infantry and there is a good covered approach available for the infantry. Tanks and infantry attacking from different directions, when conditions permit, provides surprise, maximum fire effect, and shock action.



**SOLUTION B. TANKS FOLLOW INFANTRY AND PASS THROUGH TO LEAD TO THE OBJECTIVE.**

Your tank platoon should support the armored infantry by fire initially on the high ground at point B. The armored infantry platoon should maneuver through the woods to the left down to vicinity of the blown bridge, check for mines and a ford for the tank platoon. The armored infantry platoon leader should inform the tank platoon leader by radio or prearranged pyrotechnic signal when to move the tank platoon forward. The tanks should pass through the infantry and lead across the open ground to the objective, utilizing the full effect of their mobility, fire power, and shock action. When artillery support can be obtained, the tanks should move onto the objective under time fire since the infantry is not available for close-in support.

This method of attack is employed when armored infantry must initially advance and quickly breach an obstacle to permit tanks to advance rapidly and take the lead in the attack.



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## GUDERIAN: FATHER OF THE BLITZKRIEG

**PANZER LEADER.** By Heinz Guderian. E. P. Dutton & Co., Inc., New York. 528 pp. \$7.50.

Reviewed by  
**WILLIAM T. R. FOX**

During the whole early development of Heinz Guderian's thinking, Germany had no tanks whatever, these having been forbidden under the Versailles treaty. Indeed, Guderian never saw the inside of a tank until he went to Sweden in 1928. This lack of tanks certainly made it difficult for Guderian to experiment, but the sheet metal dummies which he used as substitutes may have been adequate for some technical experiments. They were, however, not

adequate for persuading the older arms of the service to take tank warfare seriously. The tank, therefore, continued in Germany as elsewhere, although unfortunately for not so long as elsewhere, to be viewed as an infantry-support weapon, something to be used to exploit a breakthrough but not an instrument for initial breakthrough or deep penetration.

One of the disturbing impressions that arise from reading the Guderian memoirs is that dictatorship does not

erated his military heterodoxy until it finally came to support the military doctrines for which he stood.

DeGaulle, on the other hand, in the French democracy of the 1930s, in which there was presumably free competition of ideas, was unable to make his voice heard at all. Fuller was practically forced out of the British army by being given an assignment which bore no relation to his consuming interest in tank warfare. Chaffee, in the United States, saw his mechanized force disbanded in 1931.

France stumbled into its greatest crisis under the faltering leadership of sclerotic septuagenarians who were intent on refighting the First World War. The other major democracies,

### *A Feature Review* *Exclusive with* **ARMOR**

—The Author—



German Official

Heinz Guderian began his tank career as the Chief of Staff to Germany's Armored Troops Command in 1934. He commanded the 2d Panzer Division in 1935 and became Chief of Mobile Troops in 1938. He shaped the blitz forces which he was to lead in Poland, the West and the East, successively as Corps, Panzer Group and Panzer Army commander.

ARMOR—July-August, 1952

necessarily suppress military initiative. Guderian with highly unorthodox military ideas was able to fight his way up through a layer of apathetic or antagonistic superiors and progressively establish his own military doctrine in lectures and military exercises which demonstrated their worth. One of the ironies of the inter-war period is that Guderian was by no means the only specialist in mobile warfare who appreciated in advance what the next war would be like. England's Fuller, France's DeGaulle, Chaffee in the United States and Austria's von Eimannsberger were all working in the same direction; and Guderian learned much, especially from the British. But the French, British and Americans were unable to learn even from themselves. What made Guderian unique was that his government tol-

—The Reviewer—



Blackstone

William T. R. Fox is Director of the Institute of War and Peace Studies and Professor of International Relations at Columbia University and is Managing Editor of *World Politics*. He has lectured at the National and Air War Colleges, is author of *The Super-Powers*, co-author of *The Absolute Weapon and Technology and International Relations*.



because of the lucky accident that they were insular powers who were thereby granted time to prepare and to learn from the initial Panzer successes and the further circumstance that reckless misuse of Panzer divisions in the East enabled another totalitarian power to meet Hitler's tanks with more and better tanks, did not have to pay the penalty of defeat and occupation. Apparently, democracy is not inherently more likely than dictatorship to favor military initiative; that quality can find its expression if the civilian executive power is interested enough and knowledgeable enough, no matter how abhorrent and tyrannical its constitutional arrangements. On the other hand, democracy has no protection against the dead hand of traditionalism if its civilian leaders are unwilling to interest themselves enough and to learn enough to mold their policy judgments by considering and choosing among the full range of recommendations brought to their attention by the military profession, both the orthodox and the unorthodox.

In the first half of *Panzer Leader*, which deals with the reconstruction of the German army in the 1930s and with the successes of the first years of war, one sees how little industrial potential has to do with military success in a short war or in the first phases of a long war. It was not only that Hitler got the jump on Britain and France by rearming first; but he



Guderian consults with one of his officers at the front in France, 1940.

used what arms he had more effectively. Guderian's tanks did not have to be any better than the French tanks, nor even as good, for his concentrated tank formations to smash the static defense of the West. They only had to be mobile and relatively invulnerable to opposing infantry. If the French had used their tanks as he used his, then his would have had to be better and more numerous.

The Second World War seems to demonstrate that God was in the end on the side of the big battalions, although Guderian is reluctant to ad-

mit this. He records the overwhelming superiority in December, 1944 of the enemy in the East—7:1 in tanks, 11:1 in infantry and 20:1 in the air. However, he continues to write as if the critical problem was to redefine the relationship between Hitler and his generals, and between the armored forces and the traditional arms.

After October, 1944 there could no longer be any question of which side would win the war but only how and when the war would end. The seven months of dramatic and pulverizing strategic air bombardment of Germany which followed have obscured the role which armor played during the earlier, decisive periods of the war. For it was the imaginative and daring use of armor which carried the Western powers to the brink of defeat in 1940; it was the massive superiority of Soviet armor which rendered the Nazi cause hopeless in the East after 1943 and the superiority of Anglo-American armor which did the same in the West after Patton's breakthrough in 1944. Paradoxically, the Germans contributed to their own defeat by making, at Hitler's insistence, a static defense which neither permitted withdrawal in time nor permitted the creation of a concentrated reserve striking power of armored force sufficiently far behind the line of battle to permit a massive counterattack. The two sides, as it were, exchanged strategies; for in the period of German successes in the West and in Russia it was Germany's opponents who stood stolidly in fixed positions while their forces were being hacked to pieces. Neither side learned during the war how to use armored forces in large-scale defensive operations.

General Guderian's *Panzer Leader* faithfully records the successes of the Third Reich during the period when the Panzer divisions were being intelligently used and the collapse of Germany when these forces were being misused. The inference is plain that Guderian believes Germany could have caused the United Nations a whole lot more trouble than it did. We have reason to be thankful that Hitler did not take his advice, but we had better study it carefully ourselves. It is the defense of Western Europe with which NATO is principally concerned, and it is in the



The panzer leader decorates and congratulates one of his men at a ceremony.



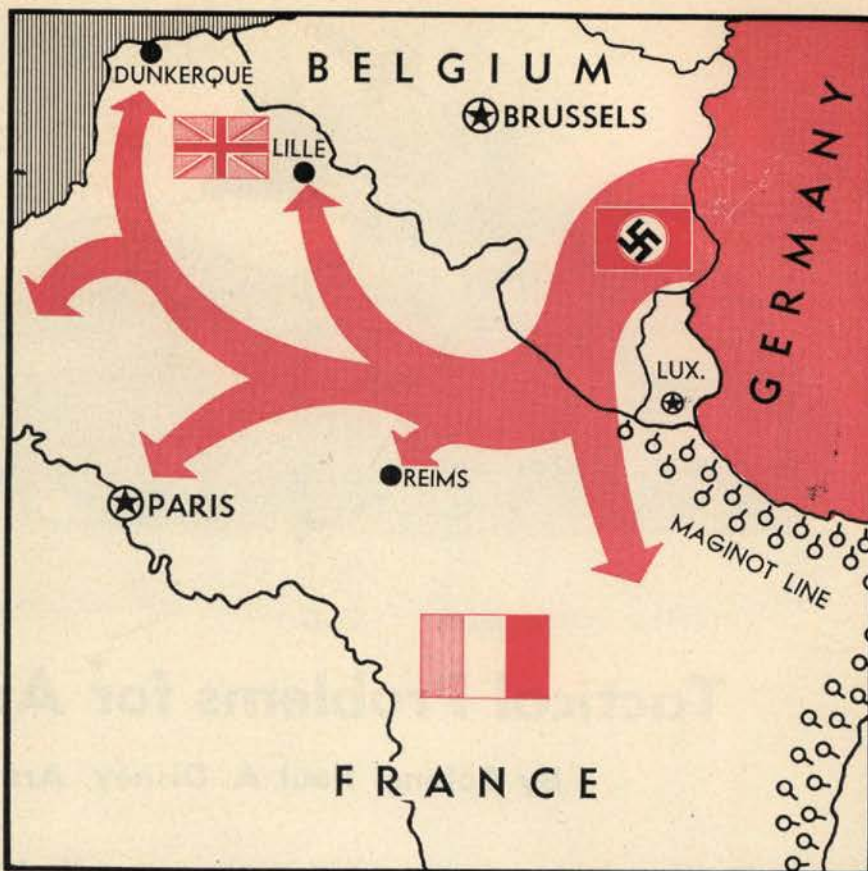
context of a strategy of defense that Guderian's advice was most persistently rejected.

How atomic artillery, super-bazookas and the latest gadgetry of antitank and antipersonnel weapons will, when fully developed and mass-produced, affect Guderian's central doctrines—in attack, the concentrated use of armored force for the initial breakthrough; and in defense, the concentrated grouping of strategic reserves of armored force well behind the battle line—it is for the professional student of mobile warfare and not for this academic amateur to say. So long, however, as the other side does not have the new gadgets and so long as we have to be in a position to fight non-atomic wars, as we have had to do in Korea, Guderian's precepts may still be directly applicable. We can freely admit that it *would* be a great boon to the non-Soviet world if ways were found to nullify Soviet tank strength; but we have to be prepared to fight today's wars as well as tomorrow's—and limited wars as well as total wars. For if the United States is to have any real chance of avoiding two-way atomic war, it must be prepared to counter Soviet efforts to nibble away at our position as well as Soviet efforts to destroy us.

Whether or not postwar advances in military technology have made Guderian's principles of mobile warfare obsolete, the panzer leader is still worth studying. What military men most need to know is what qualities of mind and spirit and what kind of training enable a man to guess right about the decisive weapons and strategies of the next war. It is not enough to guess the direction of future technological developments; one has also to be right about the timing. Guderian was right about both, *and* he was able to rise to a position of high responsibility.

Any German general's autobiography raises questions of the responsibility of the professional German military man for Hitler's military adventures. As a professed German nationalist, Guderian objected only to what he termed "excesses" or "stains upon the honor of German arms." For the rest, he is quick to pin responsibility on Hitler's predecessors or on the Nazis themselves.

It is left to Liddell Hart who writes the foreword to defend Gu-



The strategic result—Guderian's justification of his ideas for tank warfare.

derian in more sweeping terms: "... he would not question the cause for which he and his troops were serving or the duty of fighting for their country. It was sufficient for him that she was at war, and thus in danger, however it had come

about. The fulfillment of duty was not compatible with doubts. As a dutiful soldier he had to assume that his country's cause was just, and that she was defending herself against would-be conquerors. . . . But his assumptions are similar to those of most soldiers of any country at any time. Few qualms of conscience are to be found in the memoirs of those who exercised command in the wars for highly questionable causes that Britain and the U.S.A. waged in the nineteenth century. There is a markedly 'Victorian' flavour about Guderian's turn of phrase and thought. . . . Soldiers are not trained to explore the truth behind international disputes, and if they try to wrestle with the resulting questions they are likely to become incapable of performing their tasks. There is a place, and a need, for the military philosopher in the study and guidance of war, but a profoundly reflective mind does not fit easily into the service itself." This reviewer could not have been more astonished if he had read that there was something "Hitlerian" about Queen Victoria's relations with her generals and admirals.



On the East front Guderian gives instructions to a field commander.





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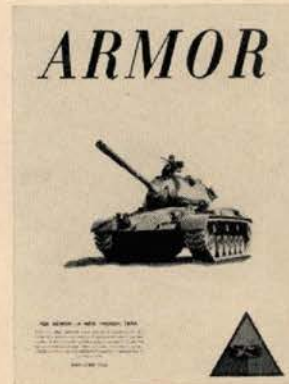
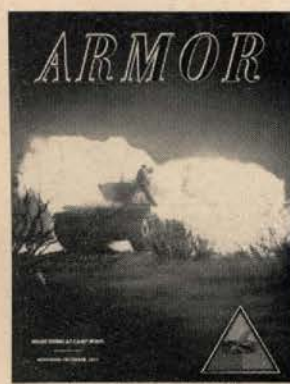
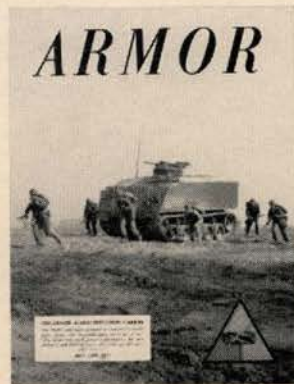
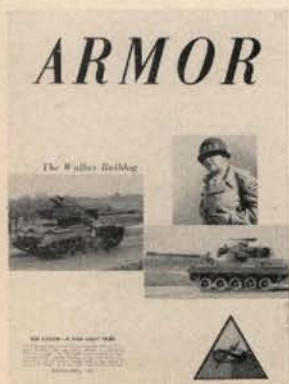
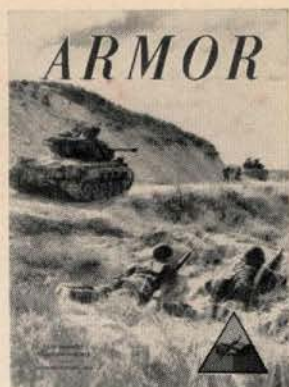
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# LETTERS to the EDITOR

## A Point of Difference

Dear Sir:

In the March-April issue of ARMOR, I read the report on the British officer who compared the M46 tank with their Centurion. I would like to make a few comparisons between the two tanks, having been afforded the opportunity to drive and fire the British tank in Korea in November 1950, when they first arrived and before they were committed in combat.

The Centurion tank is somewhat heavier than the M46 and presents a lower silhouette. On the other hand the Centurion tank is very much underpowered and has a narrow track for the amount of weight it has to support. The main gun of the British tank has a terrific muzzle velocity with a very flat trajectory. Upon firing this tank, it was very hard for me to make sight adjustments. This could be either a very good feature or turn out as a bad feature in some instances.

At the same time as the above observations were made, I was training my Heavy Tank Company for fighting in mountainous terrain. We weren't new to Korea; we had fought on the old Pusan perimeter and made the invasion at Inchon. During the previous action, all officers in our battalion had noticed the fact that we were reluctant to get upon the high ground to obtain the best firing positions and the training we were undergoing was to correct previous errors and to actually find out how steep an incline we could expect our tanks to negotiate. The British Centurions arrived in Korea and set up a camp next door to my company and we discussed the Centurion, the M26 (General Pershing), which we had at that time, and the M46 (General Patton). The British officer was a Lieutenant Rodgers, who was later killed, in January, 1951, while riding the British light tank, the Cromwell. At any rate, we used these tanks in different tests and came to the following conclusions:

a. The Centurion needed another 250 to 350 H.P. added to the power package.

b. The M26 and Centurion could not negotiate the majority of the steep inclines that were found in the terrain that the United Nations tanks were forced to fight over.

c. The M26 (General Pershing) was obsolete and should be replaced; it was slow, underpowered and not versatile enough to fight in Korea.

d. Both tanks had excellent fire power when used correctly.

In the early part of 1951, all the M26 tanks in our battalion were replaced with the M46 (General Patton) tanks. At the time I was the Assistant S3 of our battalion and we were in action alongside the British tanks. I was afforded an excellent opportunity

to observe and compare the two tanks in action and I formed the opinion that the M46 could out-maneuver and out-fight the Centurion in that particular terrain, day in and day out. However, put the two tanks in favorable tank terrain and my opinion may change due to the muzzle velocity of the Centurion gun and the low silhouette.

Regardless of which tank is the better, they are both far superior to the Russian T-34 which furnished the shock action for the North Korean army. Also, I fully realized in Korea, the American Army has a long way to go in developing and exploiting all the uses of the new and versatile tanks.

CAPT. O. M. HEARN  
Assistant Unit Instructor, ORC  
Harlingen, Texas

## Collective Security

Dear Sir:

Not long ago I ran into some copies of ARMOR, which I read with great enthusiasm, as I shall soon become a tanker myself through joining the armored regiment in the Royal Dutch Army.

I think ARMOR is a fine magazine, from cover through contents, especially by virtue of the fact that its contributors are of all ranks and both military and civilian. One example of practical application of a much-used word—democracy.

Some of the articles which I read were, however, too general to suit me. I would like to see more technical articles, with graphs and charts, tables, etc., covering such things as gas vs diesel engines, rubber-covered vs steel tracks and so on. Such articles would, to me, make your magazine an even more all-around tankers publication.

ANDRE W. AUSEMS  
Zaandijk, Holland

## Armor Association Chapters

Dear Sir:

In the interest of Armor and its objectives, several thoughts occur that I should enjoy submitting for comment and discussion.

If credence be given the popular premise that rare are the professional and social functions that do not terminate with the participants passionately engaged in creative, stimulating, and provocative . . . shop talk . . . , then why not exploit these human characteristics to the utmost of their educational value? Therefore, in an effort to enable Armor officers, regardless of assignment and geographical location, to increase their knowledge professionally and socially, thereby expanding the objectives of Armor, I propose the Association consider the organization of local chapters of the Armor Association.

These chapters, organized by interested active members throughout the world with the approval and supervision of the Association, could perpetuate the acquisition and dissemination of information on the history, activities, objectives, and methods of Armor through periodic meetings. In addition, and perhaps more important, these chapters by careful planning and organization, could sponsor or stage lectures, dinners, and/or civic functions and events designed to create supporting interest among the local populace, while simultaneously developing and encouraging the study of Armor by the young men of today.

With an eye to the future, the latter thought would be an excellent solution to the problem of acquiring spirited young men interested in machinery, ground speed, and mechanization, so necessary to the success of Armor.

CAPTAIN C. R. MCFADDEN  
Washington, D. C.

• ARMOR hastens to commend a fine idea to the Association membership and will be interested in having additional comment for Council consideration.—Ed.

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**Rates:** See bottom of contents page.



## Summer Training

Dear Sir:

The Armor Military Stakes as conducted at the Armored Center; The Tank Leaders Reaction Test Course of the 3rd Armored Division at Fort Knox, Kentucky; and the Tank-Infantry Platoon Combat Course of the 1st Armored Division at Camp Hood, Texas, are three examples of the proper method of testing individuals, crews and teams in the actual performance of combat functions under stress and competition. Naturally, these courses are well planned, elaborate in construction, and well organized, as well as efficiently operated.

Too often, however, the actual test phases of training are slighted, because of several factors; time for adequate preparation, time allowance in training schedules, and actual time to perform labor required to set in operation practical tests.

In all training doctrines, we are told that great preparation must be made, lesson plans prepared, equipment and training aids assembled, acquired or made, and complete detailed organization made prior to the scheduled time of the training. At the scheduled time of the class, the presentation may be excellent, interesting and skillful; the demonstration well executed, with a great amount of attention devoted to exact detail; and the men made to apply the lessons learned under the proper supervision of assistant instructors; the work of the group is critiqued, with a brief review; but the final part of each instructional period or phase—the test—is the weakest, because the test usually is given in a hurry, without too much preparation, and usually in writing.

At service schools, the test phase of the training periods is conducted in an excellent manner, although nearly always in writing. There are few practical tests, because much time is devoted to testing the results of the training; but, in the field with units, the tests of training periods or phases are the weakest link in the training chain, due

to lack of time, lack of preparation and pride of unit—which falsely states "my unit is good, we can do anything." There is too much assumption on the part of all leaders. Actually, the only true test of training is combat; therefore, the next best test is a practical one, rather than a written test. Practical tests are better to determine the proficiency of the individual, the crew, and the combined team.

Our unit used the Military Stakes idea during the 1952 ORC Summer Camp for testing the individual enlisted men of our organization, and we are enthusiastic about results, the interest aroused, and the method of conducting the test. But, first, briefly, something of what happened prior to ORC Camp in 1952.

Our unit, the 705th Tank Battalion (M), is the tank battalion of the 102d Infantry Division, "OZARK," one of the Organized Reserve Divisions, made up of units from Missouri and Illinois. At the conclusion of the Summer Camp period in 1951, the Battalion Commander, Lt. Col. Edward C. Gruetzmacher, had a series of tests conducted in Tank Gunnery, Maintenance, Communications, and other subjects, based upon the training conducted during the camp period. These tests were written. We later learned that these tests were the first given by any ORC or National Guard Unit at the conclusion of a Summer Training Camp. The results of the written tests were satisfactory, but the method of testing was not.

Early in 1952, plans were being made for the Summer Camp. About the time these plans were taking shape, we received the March-April issue of *ARMOR*, and in it, the story of the Armor Military Stakes instituted at the Armored Center and adapted for the Officer Candidate Course. With this story about the Military Stakes and the approval of the Battalion Commander, we started planning on a series of tests to determine the proficiency of the enlisted men of the tank battalion. The results would be a test of the training

conducted during the Summer Camp.

Prior to camp, we outlined the general idea of the tests, and made sample problems, all based upon practical work to be done by the enlisted men. The tests were to be in form of a competition, the winner receiving a cup and cash award, donated by the officers.

At Camp McCoy, Wisconsin, on the 7th of August 1952, the Armor Military Stakes were held to test the proficiency of the enlisted men of the 705th Tank Battalion (M), and the enlisted men of the Tank Companies of the 405th, 406th and 407th Infantry Regiments. The Tank Companies of the Infantry Regiments of the 102d Infantry Division were attached to the 705th Tank Battalion for training for the Summer Camp period.

Prior to the start of the competition, the only person with knowledge of the problems for each test was the officer in charge of the Armor Military Stakes. A block of three hours was allotted on the training schedule for the competition. A total of 12 hours was devoted to writing the problems, securing training aids, and the materials to make the Stakes a success. About three hours was required to set up an area about 400 by 200 feet to conduct the tests and an additional area of 100 by 100 feet for an initial and final assembly area.

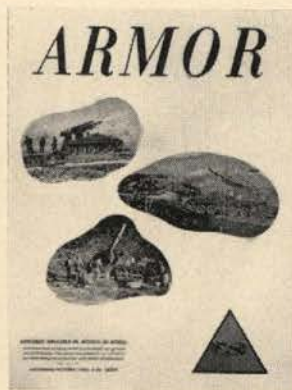
The tests were conducted on the County Fair System, with 25 stations, each station with a practical test of one or more parts. Since the tests covered the entire Camp Period, many subjects were covered.

The winner of the competition had a score of 476 points of a possible 533 points. He was Sfc Baczenas of Co A, 705th Tank Battalion.

The announcement, on the first day of the Summer Camp period, of the competition and award increased the interest in the training. It aroused a spirit of competition between individuals and units. Conditions for conducting the tests were far from ideal. The time for the tests was limited, and crowded into the training schedule when tanks would be available. Due to the time limit, situations and solutions had to be simple and yet cover the training. The area was not satisfactory, because weapons could not be fired. The ideal situation would be to conduct this competition where all weapons could be fired as a part of the test. Due to the limited number of officers available, each station had only one officer or NCO from the Regular Army Supporting Unit, Co C, 198th Tank Battalion, 31st Infantry Division. All officers of the 705th Tank Battalion (M) and attached Companies were used.

We wish to extend our appreciation to *ARMOR* for keeping us informed of the latest developments in Armor, as well as the continual flow of new ideas, which we can adapt to training.

CAPTAIN ARTHUR E. STANZE  
705th Tank Battalion (M) OR  
St. Louis, Mo.



## THE COVER

The versatility of armored artillery has been demonstrated in World War II and in Korea. However, the question of equipping our entire Army with SP artillery is a matter of cost as well as operational capabilities. Thus our primary efforts in this important field must be in terms of the armored division, where across-the-board mobility counts. Beyond that, towed equipment and some separate SP battalions must do the job of supporting the infantryman.



In the Labor Day issue of the *New York Herald Tribune*, columnist Walter Millis brought to the attention of the reading public a "large class of labor—most of it highly skilled and specialized—which has no union organization but which often works very hard indeed and to which this country owes a great deal." He noted that "one can find out something about it in the service magazines," the journals of this class of labor whose trade is war. (Mr. Millis' column is reprinted on page 31.)

Service publications are "the trade journals of war." They are the products of a profession and are published for the profession. The members of the various arms and services such as Armor, Infantry, Artillery, Ordnance, Engineers, Signal, etc., all have their trade journals, which are equally as important to them in their fields as, for example *The Journal of the American Medical Association* is to the doctor.

Professional publications have been a part of the military in many countries for many years. Their effect upon military thinking and upon professional qualification has been marked. General Wesley Merritt, famous Civil War and frontier cavalryman, writing in this magazine fifty years ago, stated "I have been told by more than one officer whose advancement in the Cavalry service has been marked, that much of the success was due to the influence of the studies [published as articles] induced by the Cavalry Association." General Merritt was the second president of this Association.

The importance of the service magazine in Germany was substantiated in conversations with Generalmajor Alfred Toppe, on the occasion of his recent visit to ARMOR as one of a group of NATO journalists. A former Cavalry officer and Quartermaster General of the German Army under Guderian, General Toppe is now editor of Germany's only authentic military magazine, *Wehr-Wissenschaftliche-Rundschau*, which deals with European defense. He can attest to the importance of the military periodical.

In the United States our own mobile arm was the first by some years to recognize the need for and value of a trade society and publication. The idea was picked up by the other branches progressively until today our arms and services are represented by organizations and magazines. The historical significance of developments in the field of mobility alone is evidenced in the change in name of the Association and its publication to remain abreast of the times. Thus have we progressed from Cavalry to Armored Cavalry to Armor. Another change would be met with equal flexibility.

The chart on these pages sets out the organizational history of our Associations and journals of the arms and services. Over and above these there are a number more of Army publications, some official, some non-official. Many more exist in the Air Force, Navy and Marine areas. They are far too numerous to mention here except to note as a point of interest that the U. S. Naval Institute was established in 1873.



ORGANIZATION DATES OF ASSOCIATIONS AND THEIR MAGAZINES

ASSOCIATION	DATE	MAGAZINE	DATE	
U. S. Armor (Cavalry) Association .....	1885	ARMOR (Cavalry Journal) .....	1888	
Association of Military Surgeons .....	1891	The Military Surgeon .....	1901	
U. S. Antiaircraft (Coast Arty.) Assn. ....	1892	Antiaircraft (CA & Arty.) Jnl. ....	1892	
Association of the U. S. Army (Infantry) ..	1893	{ merged } 1950 {	Combat Forces (Infantry) Jnl. ....	1904
Association of the U. S. Army (Field Arty.)	1910		Combat Forces (FA) Jnl. ....	1910
American Ordnance Assn. ....	1920	Ordnance .....	1920	
Society of American Military Engineers ....	1920	The Military Engineer .....	1920	
The Quartermaster Association .....	1921	Quartermaster Review .....	1921	
National Defense Transportation Assn. ...	1944	Nat. Def. Trans. Jnl. ....	1945	
Armed Forces Communications Assn. ....	1946	Signal .....	1946	
Armed Forces Chemical Assn. ....	1946	Armed Forces Chemical Jnl. ....	1946	

The story of our own country's publications is by no means the full one. ARMOR carries an exchange arrangement with many publications in many countries around the world. Our editorial office might well be mistaken for a newsstand with the large number of magazines at hand. It is a source of great editorial interest to see the publications from Italy, France, Denmark, England, India, Yugoslavia, Germany, Ireland, The Netherlands, Canada, many South American countries, and even the Belgian Congo, among others. Although language is a barrier in some cases, something can be gleaned from them all.

The periodicals that deal exclusively with armor may be numbered on the fingers of one hand. England's *The Tank*, the Journal of the Royal Tank Regiment, is more a unit type of publication

than otherwise, although it does cover some general material. *The Royal Armoured Corps Journal* publishes some armor material along with a variety of other matter. Our own ARMOR is the only magazine in the world devoted to all phases of mobile warfare in all parts of the world. Thus it has been a source of great pleasure to have the wide expression of comment and appreciation from many countries, particularly those of the North Atlantic Community, concerning the value of ARMOR. We would feel that this is a logical by-product of our primary mission—to serve the Armor arm, the United States Army and our country in this most special phase of warfare.

The Editor



**T**HE availability of light aircraft to all commanders is something new in armor and infantry units throughout the Army. During World War II, only the artillery units contained organic light aviation. At times suitable to the artillery, tank and infantry units could employ the artillery aircraft but this disadvantage is readily apparent. The basic fact was established at that time that light aircraft were a necessity in all of the basic arms.

As a result of the lessons learned, light aircraft are now organic to armor and infantry divisions. With the aircraft came the need for development of the principles of employment with armor and infantry formations. Actually, there has been very little development of the tactical concept of integrating the aircraft with tank and infantry formations. This has been due in large part to the relatively small number of tactical units present in the United States. As for armor, only one armored division has been active, and it has been only since the activation of the 1st Armored Division that extensive field activity has provided the opportunity for this development. The 1st Armored Division at Fort Hood, Texas, has been used as the basis for this presentation of the subject of employment of Army aviation. This writing will explain the tactical principles of Army aviation employment from the beginning of small-unit training to the climaxing Exercise Long Horn, a period covering about twelve months.

During the basic training phase of the Division, the aviation section was practically non-existent, since the future maintenance personnel of the section were in their basic training with various battalions. At the end of basic training, selected trainees were pulled and sent to aircraft mechanic's school. Upon their return to the Division, the aviation section began to operate. Aviators and aircraft arrived about the same time and indoctrination was begun so that the proficiency of the aviators would enable the sec-

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**CAPTAIN JAMES C. SMITH** is a graduate of the Spartan School of Aeronautics. One of Armor's light aviation specialists, he is now in the Far East Command following a tour with the 1st Armored Division, Fort Hood, Texas, where he was intimately connected with the training described in this article.



## Tactical Employment of Light Aviation with the **ARMORED DIVISION**

U.S. Army Photos



tion to support the units as early as was required for training.

At the beginning of small-unit training, the aviation section was prepared to support the units in any of their many missions. The Division Commander from the beginning stressed to the unit commanders the importance of an air reconnaissance of any type of ground exercise and encouraged the use of the aircraft during the exercise itself. The principle of early application of the aircraft at the beginning of unit training cannot be over-emphasized. It is most important to indoctrinate all personnel with the mechanic's of light avia-

tion operation at the outset. It should be understood that the aircraft is an essential weapon for the support of the smallest unit, a single vehicle in many cases. During this small-unit phase, the aircraft were used to reconnoiter for problem areas, check camouflage discipline of unit bivouac and assembly areas, correct march techniques and formations, control columns on the march, et cetera.

The idea of putting as many men as possible in the air to see for themselves the errors made by their units was used to excellent advantage. Not to be overlooked during this phase is the fact that the commanders were



*Armor's great mobility on the ground unites it automatically with the air dimension—a three-way tie with tactical aviation, air transport and light aviation. Light planes are now organic in the armored division. They provide the agile-minded armor leader with an ideal command tool for employing the arm of decision.*

by CAPTAIN JAMES C. SMITH



being trained to observe from the air, a technique in itself. As a result of the many flying hours, commanders of this Division are capable air observers. This can be true only after they have spent sufficient time in the air to develop good observer techniques.

This employment of the aircraft continued throughout the company-test period of training, with more and more training inspections being made in the air. A flaw in the tactics of the smallest unit is most evident while observing from the air, and the time required to detect errors or deficiencies is a great deal less than the

time required on the ground.

With the schedule turning to battalion tests, the tactical employment of the aircraft became of major importance. The aviation section supported each battalion with one aircraft throughout its test period, including all of the preliminary battalion problems. To provide maximum support to the battalions, the same aviator, when possible, was assigned all missions with the pertinent battalion. It is felt that the aviator in reality functions in part as an instructor, advisor, and liaison officer to the battalion and personal contact at this period of training tends to further the close

coordination demanded by this integration. Again it is brought out that heretofore, few ground force officers have had much experience with light aircraft and every attempt must be made to facilitate the operational procedures. This is the best period to indoctrinate the unit personnel with correct tactical employment of the aircraft. It is fortunate that during this phase, all personnel were fully convinced that light aircraft could be their "eyes" when utilized properly.

In this tactical phase, the technique of radio communications should be explained in order that the reader understands the operational procedures mentioned later. The type radio used is not too important, but there are several factors which must be considered so that the tactical integration of the aircraft with the units can be made possible. The success of all operations will depend on excellent radio communications because an aircraft in the air without a well operating radio is useless. This fact is mentioned because many units will wait until the last minute before tactical operations to determine whether or not their radios will operate properly.

Our particular radio is the well known SCR-510, an FM set with two preset channels. The A channel is tuned to a major command frequency and the B channel is tuned to what we call the Division Air/Ground frequency. This Air/Ground channel is the same on all Division aircraft, except the Division Artillery. This setting provides great flexibility which will be explained in higher-level operations.

For the battalion phase, channel A was tuned to the particular battalion being tested or supported, just another means of giving maximum support. During the operational period, the aircraft in support became a station in the command voice net of the battalion, thus enabling the battalion commander and all company commanders to maintain communications with the aircraft. During daylight hours, most enemy information will normally be transmitted by the aircraft in close support, so all commanders should be able to take advantage of all reports. If the battalion commander desires the aircraft to support a particular company, he can direct the aviator to work with the



desired unit, and immediately the aircraft radio will be switched to the Division Air/Ground channel in order that traffic will not interfere with the command net. Since all units monitor the Air/Ground channel, they can obtain enemy information in this manner if they so desire. The Air/Ground channel in effect becomes a reconnaissance net, one which all units in the Division can monitor. With the mobility built into the armored division, timely enemy information is of utmost importance to all commanders, since the enemy situation will change accordingly. By the end of the battalion test phase, both the battalions and the aviation section were ready to proceed to combat command exercises to be followed by combat command tests.

Upon reaching the combat command phase of training, it was decided that in normal situations, two aircraft were needed for close support to this level of operations. Normally, a combat command will contain two or more reinforced battalions which in turn will employ tank-infantry teams. The control of such a force is paramount, and to facilitate operations, radio channel A was tuned to the combat command channel and the B again to the Air/Ground channel. With these two channels, the combat commander can either have them operate in his command net or assign them to operate with any one of his subordinate commands on the Air/Ground channel. This procedure enables the reinforced battalions to utilize the aircraft in close support without interfering with the command voice net. With so much radio traffic on the command net, it is virtually impossible for the aircraft to

operate on this channel, except for reporting in to the command and receiving instructions for reporting to the various subordinate commands.

After completing a mission with a subordinate unit, the aviator reports back in to the combat command net for further missions. Using this method, the combat commander is insured maximum utilization of the aircraft operating in close support of his command. In addition to the normal flow of intelligence reports through command channels, the S-2 will normally monitor the Air/Ground channel, thereby receiving current enemy information. With eighty tunable channels in the new radio set proposed for light aircraft, even greater flexibility will be possible in assigning the aircraft to work with various battalions and companies. With the combat commander in the air, most of the communications will be on the command net, putting him in a position where he can see all of his command at once. Already our commanders had learned the value of command control from the air, and as a result, much time was spent by all commanders actually in the air.

The advantages of command control by air are increased during periods when the commands are moving forward in the attack, moving to contact, or exploiting the rear areas. The same advantages are true when the enemy is on the move, because early observation enables the commander to shift his forces to meet any or all threats. The larger the size of the combat command, the more important it will be for the commander to be in a position where he can see what is going on and make corrections or changes when

necessary. The time lag in command channel reporting will, on many occasions, prevent the commander from reacting to changes of mission, altering of routes, reassigning of objectives, et cetera. In the air, the commander can move his forces as a checker player moves his checkers. Timing is a very important factor to consider in armor, and the ability to see enemy actions, report this action, and issue orders to counteract the situation, is one which all commanders can obtain with command control in the air.

Since the reinforced battalions of the armored division are capable of covering miles of terrain in a relatively short period of time, the problem of reconnaissance becomes pronounced. In the air it is possible for the commander to observe the ground over which he will move his battalions, directing them over the best terrain suitable to their assigned missions. A great amount of time can be saved an armored formation moving over strange terrain by utilizing this method. The use of a subordinate will, in many cases, cause a time lag which will prevent the over-all success of the mission. The loss of even an hour can mean the difference of ten miles in armored operation. Even after the receipt of information from a subordinate observer, it is impossible to react as rapidly as is necessary during critical periods of operation. Major General Bruce C. Clarke, Division Commander, spent over forty hours in the air over front-line commands during Exercise Long Horn, supervising their actions and movements, always in a position to take advantage of any target of opportunity.

To maintain two aircraft with the combat commands continuously, it was necessary for the Division aviation section to support the command with all aircraft assigned to the section, seven in number. Later, it will be seen how this limits the operational capabilities of the aviation section. When possible, one of the aircraft should be maintained in reserve so that one of the craft will be available over the front during all daylight hours. It is impossible for one aviator and aircraft to properly support a command of any size for more than four hours day after day in combat situation. This fact should be rec-





ognized in training so that full utilization of every flying hour is obtained, and all concerned are prepared for combat realism. By the end of combat command test, most of the problems of coordination and control between the aviation section and the tactical commands had been eliminated and sound techniques developed.

The problem of integrating seven aircraft with the Division as a whole became apparent prior to Division exercises, and in order to best support all three combat commands in addition to complying with Division requirements, the following are some of the considerations which dictated distribution to the commands: First, to get maximum utilization of every flying hour, it was evident that a ground radio station capable of operating all aircraft from the base strip was an absolute necessity. Remoted to the operations tent, it is possible to call an aircraft from an inactive area and place it in support of a unit which requires more assistance at the time. Secondly, in an evening conference with the Division G2 and G3, priority of missions must be given to those commands bearing the brunt of the next day's operations. To these commands the aviation is assigned a direct support mission, which means that initially, one aircraft reports in over that command at first light. The aviator, in effect, becomes a liaison officer to that command, and it becomes his responsibility to inform the Division Aviation Officer when one aircraft is not sufficient to support the command. There is no other individual in a better position to determine when more aircraft are necessary than the aviator who has been working with the command. This will be true in all instances except when the missions are changed and then it will be necessary to switch priority from one command to another. At this time, the G3 informs the Aviation Officer of the change; he, in turn, will put another aircraft in the air. With the ground radio station at the base strip, it is possible for the commands to call direct to the Aviation Officer for additional support, and they will normally get it if the aircraft are available. With this close system of control, it is possible to prevent a wasting of aviators or aircraft flying time over inactive fronts. The



third principle is that in the final analysis, the Division Aviation Officer must determine how much support can be given any one command in accordance with the missions given him by the G3.

From a study of the above listed operational techniques, one can begin to see that our operations closely parallel the air/ground operations system of close fighter support. The ultimate in all our operations is to make the light aircraft available for close support to the front line companies and battalions.

After many days in the field on Division exercises, Exercise Long Horn was begun with a further determination to streamline the operations of close support Army aviation. Most of the operational periods were similar to the actions of former training exercises. Some of the limitations mentioned previously became pronounced during the phases of Long Horn, the main one being the shortage of assigned aircraft to the Division Headquarters section. To adequately support three combat commands and the Division, the following are considered minimum: two aircraft to each combat command, totaling six; one for the CG and Assistant CG; one for G3 activities; one for the reconnaissance battalion (possibly two); one for the engineer battalion and signal company. This distribution totals ten two-place aircraft and does not show aircraft on the ground for necessary maintenance activities and for other activities, such as courier and liaison flights to higher and adjacent units.

On many occasions, the 1st Armored Division was spread on a wide front (as much as thirty miles), and in these situations it is impossible to support the Division properly with

seven aircraft. However, using the system explained in previous paragraphs, over four hundred hours were flown by the Division Headquarters section in close support of the front-line commands during sixteen days of operations. Only with close control and proper utilization of every aircraft and aviator was this possible. All Army aircraft in the Division, which includes Division Artillery, flew eight hundred thirty-one hours during this period without accident. This flying time includes fourteen hundred and sixty landings with over fifty-five hours of nighttime. All of the flying was done from rough field strips of which sixty-two were used during the maneuver in support of Division units. It is firmly believed that this record indicates clearly the merits of Army aviation in close support operating under centralized control.

In review, it must be emphasized that only under centralized control can the available aircraft be utilized to the best possible advantage, but it should be recognized that the assignment of aircraft in the present T/O&E for the armored division should be as listed above in order that all commands may be supported adequately. Under this control, the problems of messing, maintenance of aircraft, rotation of flying personnel, supply of spare parts and equipment, et cetera, are minimized. As has been brought out in Division critiques by General Clarke, 1st Armored Division Commander, "the Army aircraft is the most valuable single piece of equipment the armored unit commander has available, and its proper utilization and employment in training and in operations will greatly enhance its value to the commander."



*Artillery's historic support role in the ground combat picture has been much enhanced by developments in the self-propelled field. Mobility, protection, communications, control, shock—these are elaborations fitting to the modern battlefield and the major support arm. The inherent capabilities of the self-propelled battalion explain why many artillerymen say*

## **ARMORED Artillery is the Thing!**

by **LIEUTENANT COLONEL LEON F. LAVOIE**

Photos by the author





**T**HAT history repeats itself is a generally accepted fact. Of considerable concern to the author, however, is how many recurring incidents of a particular pattern must be recorded in the annals of history before effectively motivating the mind to accept these recurring incidents as fact and guidance for the future?

At Faid Pass, North Africa, the Germans made an armor attack. The 17th Field Artillery Regiment (towed) was overrun and lost. The 91st Armored Field Artillery fought its way out of the trap. At Cassino in Italy the Germans launched an armor and infantry attack against the 93rd Armored Field Artillery. The attack was defeated with only minor loss in friendly casualties. At the Battle of the Bulge, the 106th Division Artillery (towed) was overrun and lost.

In the Pacific Theater there were numerous cases where the Japanese infiltrated sizable forces into our towed artillery positions and inflicted serious losses. In the earlier stages of the Korean campaign every towed artillery unit was attacked one or more times, suffering serious losses. The most serious loss was suffered December 1, 1950, by the 2nd Division Artillery (towed) in the Kunu-ri Road Block. Yet, on the 24th of April, 1951, northwest of Chunchon, the 92nd Armored Field Artillery Battalion soundly defeated, with terrific losses, an attack on their position by a sizable Chinese Communist force. Minor friendly personnel losses were suffered and no equipment was lost.

On or about 21 May 1951, the 213th Armored Field Artillery Battalion (105 SP M7) completely defeated a large enemy force that attacked their perimeter north of Kapyong. When the smoke cleared, they counted minor friendly casualties and gathered over 300 enemy dead and several hundred prisoners. In Korea alone we have suffered a loss of better than 400 towed artillery pieces, a priceless commodity at a time when it was needed most. Obviously circumstances were different

in each case and no flat statement can be made that will fit any and every action. But an analysis of organization and capabilities and limitations goes far toward supporting the combat examples.

While Korea differs materially from the World War II pattern of Europe, Korea may well be representative of many actions in which we will be called upon to participate in our support of freedom-loving nations on all continents. Our potential enemy is certain to have manpower

Tactical mobility is paramount in support of any rapidly moving situation. This battalion has provided fire power and shock action in support of nearly every type of offensive operation and has also been quite useful as a "fanny fender" in support of rear-guard action. The battalion, on occasion, has been called upon to act as a fire brigade, dashing from one division to another along the corps front, providing covering fires during the relief of other artillery units.—Lt. Col. Cleveland, present commander of the "Red Devils," in *Sum & Substance*, ARMOR, July-August 1952.

superiority as he does in Korea but as long as steel can penetrate flesh, our inherent firepower superiority will keep us with the initiative for the offensive.

War implies seizing the initiative by force. The element of surprise initially favors that side which initiates war. As a nonaggressor nation, we must first be attacked or transgressed prior to active war. World War I and II found our allies taking the brunt of this initial force while the United States mobilized, equipped, and trained a balanced offensive force. In future wars, we are certain to meet the initial shock with troops and equipment on hand. These facts indicate a requirement for an initial highly mobile defensive force to defend, delay, and to gain time to

assume the offensive—eventually. Obviously then, the effectiveness of our initial defensive force will greatly influence the eventual offensive. Both must employ the most modern, hard-hitting and decisive weapons that our science, industry, and economy can produce and sustain.

As Korea vividly illustrates, surprise and sneak attacks upon artillery positions have proven to be a particularly lucrative enterprise for the Red hordes who sought to stalk and ambush this dreaded weapon. Panic, resulting from a hostile act, often proves much more disastrous than the hostile act itself. In the first decisive moments, faith and confidence in equipment and weapons instilled through realistic training will alone override panic and influence victory. In artillery units, this faith and confidence is best realized and sustained in the self-propelled battalion through its superior fire power, light armor protection, cross-country mobility, and compact rolling stock.

Embarrassingly reminiscent of our Indian warfare of early days, the CCF's tactics emphasize infiltration and sneak tactics and close-in combat. Their initial object is the disruption of supporting units. Recognizing the numerical superiority of any potential enemy, this presents a serious threat to our present and future forces. The CCF in Korea follow the following general pattern:

a. The infiltration of small parties into our flanks to cut off our rear, transport, and resupply.

b. Night advance, to feel out our position and then attack promptly where our fire is weakest. (This is usually coordinated by signals from an OP.)

c. The utilization of noisemaking devices for our demoralization.

d. Charging the position with several CCF, loaded with grenades which they toss into ammo vehicles and gas tanks, to create confusion and panic within the position. Thereafter, they open up with supporting weapons to methodically reduce the position.

In contrast to the stabilized lines of conventional warfare of World War II in Europe, the CCF cash in on their numerical superiority to infiltrate to our rear, cut off our supply, and disrupt and subjugate our principal close-support weapon, the

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artillery. Under these circumstances, then, the artillery battalion's perimeter must become a tight, coordinated, and mutually supporting defensive ring, suggestive of the covered wagon camp of our early western pioneers. Obviously an infantry commander cannot make a battalion of infantry available for the security of every artillery battalion. Therefore, an artillery battalion must be able to secure and defend itself in the execu-

as part of a larger plan. The evacuation of an established defensive perimeter for the unknown, particularly at night, is most imprudent. One or two CCF, cleverly situated at a defile, may knock out a lead vehicle and thereby establish a road block as planned. Thereafter, the column is methodically reduced by grenades and automatic weapons that turn the column into a conflagration.

Dependent upon the degree of en-

sonnel carriers, fifty-eight .50 caliber machine guns, thirty-eight .30 caliber machine guns, forty-three 3.5 rockets and several hundred carbines, submachine guns and grenades! Meanwhile, cannoneers are protected by light armor against small arms and fragmentation and, further, should the need arise, the SP guns can maneuver and fire in a manner similar to a tank in support of the perimeter.

With time permitting, as in a relatively stabilized situation, the outpost line may be further developed, to incorporate natural and improvised obstacles. Concertina and barbed wire aprons with trip flares, fragmentation and white phosphorus grenades intermingled, are an effective challenge to the intruder. Partially filled fifty-five gallon gas drums and oil-soaked straw stacks with waste powder increments can be readily ignited by tracer ammunition. To further satisfy one's fancy, white phosphorus and HE "Projos" (with damaged rotating bends) may be planted and wired across likely avenues of approach and detonated at will, by electric cap, field wired to any control point. All such obstacles must be covered by grazing fire.

Meanwhile, outposts organized around the half track or other armored personnel carrier become a veritable pillbox, with two or more machine guns, a basic load of fragmentation, white phosphorus, and illuminating grenades. Interconnected by a multiple hot-loop wire net, and with radio as a reserve, these outposts listen, detect, report, investigate, cause to deploy prematurely and, if possible, destroy the invader.

Should the enemy overrun an outpost, he has yet to face the worst—for the main battle line, completely dug in just beyond grenade throwing range of the artillery and related sensitive installations, has now been manned in strength. Small arms, automatic weapons, grenades, bazookas, direct artillery fire, and incendiary obstacles covered by fire are destined to demoralize and destroy his will to fight. This then becomes that supreme moment of test—of steel versus flesh, in which our best leadership, equipment, and training will outdo the enemy. As to the outcome, history gallantly records that self-propelled artillery is best suited for this



Certain limitation in ability to employ very high angle fire with the SP piece is offset by placing the vehicle on an appropriate natural or bull-dozed slope.

tion of its primary mission—that of rendering artillery support to the infantry and tanks. Yet, according to CCF tactics, the very moment at which the front lines are in urgent need of support may well be when the supporting artillery is itself under attack. Therefore, in our concept of the infantry-tank-artillery team, the sole justification for the existence of the artillery commander at this juncture is to insure his artillery support to his team.

Through leadership, complemented by seasoned training, and based upon faith and confidence in weapons and equipment, the artillery commander must be ruthless in his defensive tactics. He must also be assured that, if he becomes surrounded, a counterattack will restore the initial condition. Abandonment of position must be a carefully considered order by a senior commander

emy air activity, the ideal artillery battalion perimeter becomes a tightly knitted and mutually supporting area of about seven hundred by seven hundred yards—largely influenced by the local terrain. With Battalion Headquarters nestled within a triangle formed by the three firing batteries, the organization and development of the battalion into an impenetrable ring of steel is possible by the employment of:

- a. Strong outposts to detect, report, and delay the enemy and insure timely warning to the interior installations.

- b. An interior, dug-in main battle line that can be manned in strength quickly and held at all cost.

- c. A local and battalion reserve that can be readily dispatched to reinforce the threatened sector.

Visualize the SP Battalion perimeter with its thirty-five Armored per-



job. It has the means of victory.

To delineate fact from fiction in the reader's mind, the "Red Devils" of the 92nd Armored Field Artillery Battalion (155-SP-M41) continually employed the above procedure in Korea, where this Battalion won continuous praise in its support of all United States Divisions and five Korean divisions. As direct support artillery for "Task Force Dog" in early December 1950, this battalion occupied treacherous positions at Chinhung-ni in support of the Task Force's mission of keeping the axis Koto-Ri-Chinhung-ni-Sudong-ni-Monjongdong open for the relief of the gallant Marine and Army units at Chosen Reservoir. In this environment of a numerically superior enemy force and bitter sub-zero weather, this SP artillery unit supported this difficult rear guard action and defended itself to the satisfaction and praise of the Marines and the Army.

Again on 24 April 1951, following the complete collapse of a Korean division, the position of the 92nd's Red Devils was attacked in force at 0515 hours with heavy enemy mortar and automatic weapons fire, and charging grenade-bearing CCF. Through measures outlined herein, this brazen attack was repulsed without loss of equipment and a minimum loss of life. Our comrades who paid the supreme sacrifice did so in outstanding acts of bravery resulting from faith and confidence in their equipment. Possibly faith and confidence may be further illustrated by a group of men with Service Battery, to the rear, who started out—cross-country—to the Battalion's assistance upon hearing of the enemy's attack upon the Battalion position.

The advantages and convincing performance of self-propelled artillery units in Africa, Sicily, Italy, Germany, and now Korea, has been largely based upon "acetylene torch makeshifts" converted from existing tanks. Future SP's will be engineered SP artillery and as such will further enhance the effectiveness of the SP artillery. Campaigns will differ by the mixture of the basic ingredients of enemy, terrain, and force available. But, since our training is geared to an eventual offensive, we must insist that this basic support commodity is highly mobile tactically, flexible by virtue of abundant communica-

tions, and compact. Artillery, effectively to support, must be well forward and capable of instant reaction to "on call" fire missions and must be able to secure itself on the march and in position to include instantaneous direct fire. Tactical mobility and fire power must remain foremost if we are to cash in on the type of warfare we are best suited to fight. Self-propelled artillery gives shock action to the greatest supporting arm of the

we will not have time for uncoupling—splitting trails, trail logging, and tedious hand shifting. That is where we will need compact, self-contained rolling stock with ammo at the breach, radio within reach and a motor underneath.

Conclusively, self-propelled artillery is superior to towed, by reason of:

- Greater tactical mobility and ability to negotiate rough terrain.



In defense the SP battalion offers cannoneers light armor protection from small arms and fragmentation, while the guns maneuver and fire in perimeter support.

infantry-tank team. Through this insistence we will retain the initiative for the offensive.

The writer is not proposing the complete abolishment of towed artillery. We have a need for towed artillery just as we have a definite need for pack artillery. Had we had pack artillery in Korea to support the Korean divisions in the mountainous sectors devoid of road nets, we could have greatly increased the effective fire power to their front and filled a serious gap; one that the CCF soon recognized and capitalized on. On the other hand, modern warfare involves greater distances, greater dispersion, and greater speed with less time for reaction. An early, well-aimed round amongst enemy personnel in the open is far better than a battalion volley later—when they have logged-in shelters.

For our principal nuclear force,

- Greater automatic weapons fire power and light armor, which enables it to better secure itself in position and protect itself on the march.

- More compact rolling stock—assuring immediate fire support within the minute on the march and in position.

- Multiple and flexible means of radio communications insuring fingertip control with all elements.

- More protection for gun squads rendering continued fire support while undergoing attack.

- Ability to fight in the manner of tanks in close defense of the position.

- The shock action it gives to artillery.

Tailored for the offensive by its inherent ability to support well forward, it is likewise better suited to support the rear guard action—when necessary.



# The Ground Soldier

In these days of tanks, self-propelled artillery, armored personnel carriers and planes, it is astonishing to hear so much talk in terms of the *foot* soldier. Perhaps this is nothing more than the habit of tradition. What is meant, undoubtedly, is the *ground* soldier.

Much of the reference to the foot soldier has been inspired in the air-versus-ground debate. While most thinking now is properly oriented to the balanced team concept in which all services play their part, many proponents of the Army side insist upon stating their case in the same old way, "You can't do away with the *foot* soldier (or *infantryman* or *rifleman*)!"

This only partially meets the matter. It is an over-identification of the Infantry in a situation that involves the entire Army. If what is meant in these various statements is simply the fact that today we can't fight a war without an *Army*, the pronouncements should be plain in terms of the *ground* soldier. The point may seem casual enough, but it indicates the need for a closer appraisal of the trend in ground armies today.

History, which has brought man a long way beyond his two feet, has done the corresponding thing for the soldier. Developments in weapons, transportation and locomotion have caused a continuing revision of military organization and tactics. Since the foot soldier was the starting point, the trend must obviously be away from him and in favor of later innovations.

While these innovations reach their ultimate in such agencies as Air Force and Armor, they have by no means passed by the Infantry, which has undergone internal revision in keeping with the day. Tanks, personnel carriers, machine guns, bazookas, mortars and recoilless rifles have brought the Infantry its measure of modernity, properly at the expense of the rifle and the rifleman. Review and revision must never cease.

But there is a definite trend within the ground forces which was sparked in World War II. It is the gradual adjustment to a better balance by bringing our potent weapons into the picture. Infantry always has borne the brunt of combat losses. In the effort to relieve her of the distinction of being the casualty branch, we have a definite program for providing strong mobile elements to do the job in these times, units capable of dealing out punishment while sustaining minimum loss. This points up the value of Armor on the modern battlefield.

In speaking of our ground force in terms of the rifleman or the infantryman, we are slighting a major element of our ground team—the Artillery. For while it is true that Infantry suffers the greater losses, it is equally true and a matter of record that Artillery dishes them out. Ask the rifleman what he sweats out on the battlefield. If he mentions rifles it will be after he has listed artillery, tanks and bombs—assuming he has had experience with each.

For those ready to mention Korea at this point and the predominantly Infantry role there—in which Artillery has a tremendous role and Armor a substantial one—it is best to note that here is a special situation that is not the common denominator of war. Our remarks apply more to the general type of warfare obtaining in World War II, wars fought to the limit over all types of terrain and for a military decision . . . wars where Armor serves its ideal purpose—as a primary assault arm in the offensive, in large action for decisive results.

Developments in weapons, including the atom, have increased the need for dispersion. Dispersion connotes speed, mobility, *mounted* forces, or, to carry it out, Armor.

The modern army is a team of ground soldiers, of combined arms. Within that team are the two main tools—the infantry division and the armored division. The long history of a ground army where all elements exist to support the infantry is gradually shifting. As warfare shifts from trenches and Maginot Lines and static and continuous fronts—from holding to moving situations, from defensive to offensive action—Armor comes into play. For in Armor there is a team in which infantry and artillery and engineers and other services, all exist to support the tanks as the main striking element.

What of the men required to take and hold an objective? Increasingly they will be the men of the Armor team—*armored* infantry, who arrived *mounted* on the objective right along with the tanks and self-propelled artillery—men protected to a substantial degree from the number one killer and provided with some solid death-dealing capabilities of their own.

Our Army is a great team today, a team of *ground* soldiers.



# FROM THESE PAGES

## 60 Years Ago

Deductions regarding the future can be drawn only from the lessons of the wars of the past, coupled, of course, with the necessary considerations caused by modern progress in arms, ammunition and material. But the results in the past have been so widely divergent in character that each disputant finds in them material for upholding his own views, and very often condemning as meretricious those of his opponents. The question will probably never be decided to the entire satisfaction of either side, not even by the next great war, since whatever the results every disputant, especially if a theoretical one, will find plenty of authority of some kind for supporting his own especial theories.

And the subject may at present be looked upon as presenting the best possible ground for theories. Although all European nations, and our own as well, are reorganizing their cavalries and drilling them according to new tactics and regulations, yet these regulations have not the positiveness of those for infantry, and there is a view of "if" running through many parts of them which cannot well be avoided. It is difficult to fix with exactness the extent to which the use of mounted troops will be carried in certain directions, and this difficulty is somewhat increased by doubt as to the exact tactical formations for attack, which will be adopted by the infantry against which they may be called upon to operate.

### *The Tactical Use of Mounted Troops*

LT. GEORGE W. VAN DEUSEN

## 40 Years Ago

In reference to the present discussion concerning the utility of the pistol, it might be well to consider if most of the objections to the arm could not be eliminated before deciding to abolish a weapon distinctively "American" and which has been developed in actual service. The principal objections urged against it are:

1. It is a difficult weapon for the average man to learn to use.
2. In the hands of the average it is not accurate.
3. Instruction in its use takes too much time.

We want, then, a pistol the average trooper can become reasonably proficient with in a short time. I believe this can be accomplished by changing the form of the pistol and the method of target practice.

The pistol is essentially a short range weapon; its target in service is over five feet high and two feet wide. Now, while it may be difficult to teach a man to hit a five-inch bull's eye at fifty yards, it is not so difficult to teach him to hit a man or a horse at ten, either mounted or dismounted, provided he is given a weapon he can handle. To do this the pistol should be used like a shotgun, pointed, not aimed. This was recognized in the old drill regulations and in the old firing regulations, and there is a halfhearted attempt to indicate it in the present book, but we can depend upon the fact that so long as a man's qualifying as a pistol shot depends on his being able to hit a small spot at fifty yards, he will sight his pistol and not point it. We can trace this kind of firing, as well as nearly every weak point in both rifle and pistol, to competitions and competition training.

### *The Revolver*

LT. K. B. EDMUNDS

## 25 Years Ago

During the annual preliminary training and range practice of the 2d Machine Gun Squadron this year, a new method of "dry shooting" was very successfully used.

The reduction in the allowance of ammunition for machine gun marksmanship training has made it necessary to find some effective way of teaching manipulation and observation simultaneously, without using more ammunition than allowed. The manipulation exercises prescribed in regulations cause the gunner to concentrate his mind entirely on his gun, whereas in actual firing this attention is divided between the gun and the effect of his fire. At the same time the soldier's interest must be maintained if the time spent is really worth while.

The objects in mind were:

1. To decrease the amount of time necessary for range practice.
2. To increase the ability of the individual in mechanical manipulation of the gun.
3. To perfect training in observation of fire without expending ammunition.
4. To keep each man active and interested, when on the firing line, but not at the gun.

In teaching observation and manipulation on the 1000-inch range, the following blackboard method was used:

All men, except the one "dry firing" and the coach, sat just in the rear of the gun. Or, in case two or more guns were available, the men were divided equally between the guns so that each man could get more actual work on the gun. The officer or "non-com" who conducted the problem stood at the target (placed 1000 inches from the gun). He used a pointer (a small stick with a black spot on the end about one-half inch in diameter) to mark or plot the simulated shots.

As when firing with live ammunition, the sights were set to hit the application and the gun knocked five mils or more off in each direction; time was taken on the command "Commence Firing," and the problem started.

### *Machine Gun Marksmanship Training*

LT. W. P. CAMPBELL

## 10 Years Ago

Every day we read news commentaries in which, according to the often biased opinion of the writer, the success of a battle is attributed to the superiority of some one particular arm of the victor's forces. This claim might be justifiable in a few specific situations or isolated actions, but the superiority of no single arm in itself wins a war. Decisive victories most often depend upon the coordination and proper use of all of the arms available to the commander of the force. This coordination must be based upon the complete knowledge (by the commander and his staff) of the tactical use of each arm that is a part of his force. The role that each arm must play and the time of its entry into the battle must be thoroughly worked out—each with proper consideration of the capabilities and limitations of the other arms involved.

### *Coordination*

EDITORIAL



*An engineer discusses a subject of compelling interest to all tankers*

## GAS TURBINES FOR TANKS?

by **RICHARD M. OGORKIEWICZ**

**T**HE success of the gas turbine in the field of aircraft propulsion has inevitably attracted attention to its possible use in other fields, including that of automotive vehicles. Experimental gas turbine units are already running in non-military vehicles and their possible use in tanks has been mentioned on a number of occasions. The question then immediately arises how the gas turbine compares with existing types of power plants and whether, or when, it is likely to replace them.

Before this can be examined, however, it is necessary to make clear a number of more general points, including the reason for the success of the gas turbine in the aircraft field.

### Jet Engines and Others

The main reasons for the success of the aircraft gas turbine are briefly two. One is the rapid rise in the power requirements of modern aircraft. This was particularly marked during World War II and produced a demand for units of large power and yet of low weight. The other reason is the equally rapid increase in the operating speeds of aircraft, to speeds at which jet propulsion not only became competitive with, but actually more efficient than the hitherto universally used propeller. The two combined, the simple gas turbine being eminently suitable for producing large power outputs in the form

of a high speed jet, and together with the development of high temperature alloys, brought about the development of the aircraft gas turbine. The gas turbine has already replaced the older type of plant in all high speed aircraft and its use is continuously being extended.

At the other end of the scale where the gas turbine is being successfully applied, namely in electric power stations, ship propulsion and locomotives, the position is somewhat different. Here, of course, power is produced not in the form of a high speed jet but in shaft power to drive machinery and the unit is considerably more complicated than the simple aircraft gas turbine. As in the aircraft field, power requirements are generally high but weight and space limitations are less stringent and diesel engines and steam turbines have been able to satisfy the requirements and at the same time operate with high efficiency. For these reasons the relative advantages of the gas turbine are smaller and competition from existing power units much stronger than in the case of aircraft.

For automotive vehicles power requirements are generally much lower than those in any of the above mentioned applications. But, on the other hand, something approaching the simplicity and high power/weight ratio of the aircraft turbine and the operating efficiency of the large, stationary gas turbine are simultaneously demanded. And it must satisfy these demands if it is to be an effective competitor of the existing reciprocating engine. It must also be able to operate efficiently under vary-

ing load—part as well as full load.

This is one of the difficulties in the path of the introduction of the gas turbine into the automotive field for its efficiency falls off markedly away from the design conditions and load. Other difficulties, common to all types of gas turbines, are associated with the high operating temperatures and component design and these will be more apparent after a more detailed, though necessarily brief, examination of a gas turbine unit.

### Basic Design

A typical gas turbine of the type which is now being tried experimentally is shown in the diagrammatic cut away section. It consists of a number of separate components which collectively perform a cycle of operations corresponding to that in the cylinder of a reciprocating, piston engine.

Following the direction of gas flow, air is sucked into the unit by a centrifugal compressor. The compressor, like a centrifugal pump, imparts energy to the air passing through it and hence increases its pressure. Through ducting, the compressed air is passed to a combustion chamber where fuel is continuously injected in the form of a spray, and burnt. Temperatures of the combustion products are of the order of 1,200°F. to 1,600°F. and these hot gases pass from the combustion chamber, through nozzles, to the turbine. This turbine supplies power necessary to drive the compressor and is generally referred to as the "compressor turbine."

The components so far described

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form a thermodynamically complete unit which is common to all gas turbine engines and which is basically a gas producer. The aircraft turbo-jet engine is simply that and nothing more. The useful power developed by the engine is the high velocity stream of gases issuing from the compressor turbine and this jet produces the propulsive thrust.

For automotive applications, shaft power, instead of a jet, is required and a power section has to be added to the gas producer. This consists of a second, or "power," turbine, mechanically independent of the compressor turbine and which absorbs energy from the gas stream leaving the latter. The energy or power developed at the turbine is transmitted through a suitable reduction gear to the output shaft. The maximum power developed at the power turbine is at all times determined by the surplus energy available from the gas producer.

#### Advantages . . .

The fact that the useful power is developed at a turbine wheel, mechanically independent of the compressor turbine and the whole gas

producer section, is a great advantage from the automotive point of view, for the separate power turbine performs similarly to a torque converter. In other words, its torque increases as the speed decreases, the stalled torque available at the output shaft being two, or more, times the maximum running torque. The torque characteristics of the gas turbine are thus theoretically ideal for an automotive application, in contrast to the reciprocating, piston-type engine which requires a multi-speed gearbox or a hydro-kinetic torque converter to vary the output according to the ground conditions. And, as in the case of the torque converter, no clutch or coupling is necessary to disconnect the unit at any time from the final drive.

This considerably simplifies many problems since the automotive gas turbine is a self-contained power unit and is fundamentally much simpler than any reciprocating engine and its associated transmission.

It has the further advantage over the latter in that the cycle of operations is continuous, and not intermittent as in the cylinder of a piston engine, and that the motion of its

working parts is of a simple rotary type. This means that there is none of the inherent unbalance and fluctuating output of the reciprocating engine. A distinct engineering advantage, quite apart from any aesthetic appeal.

#### . . . and Disadvantages

Against these advantages must be set off a number of disadvantages, when compared with the reciprocating engine.

One inherent drawback is that the gas turbine, like all fixed blade turbo-machines such as torque converters, fixed pitch propellers, etc., loses efficiency when it is not running at its design conditions. In other words, from the point of view of efficient operation, it is inflexible which is a much more serious drawback in an automotive application than in any other since here most of the running is at part load.

Another drawback is that the gas turbine requires a much larger volume of air throughout for any given power than a reciprocating engine. It requires at least five times as much air, or, with the operating temperatures at present practicable, even

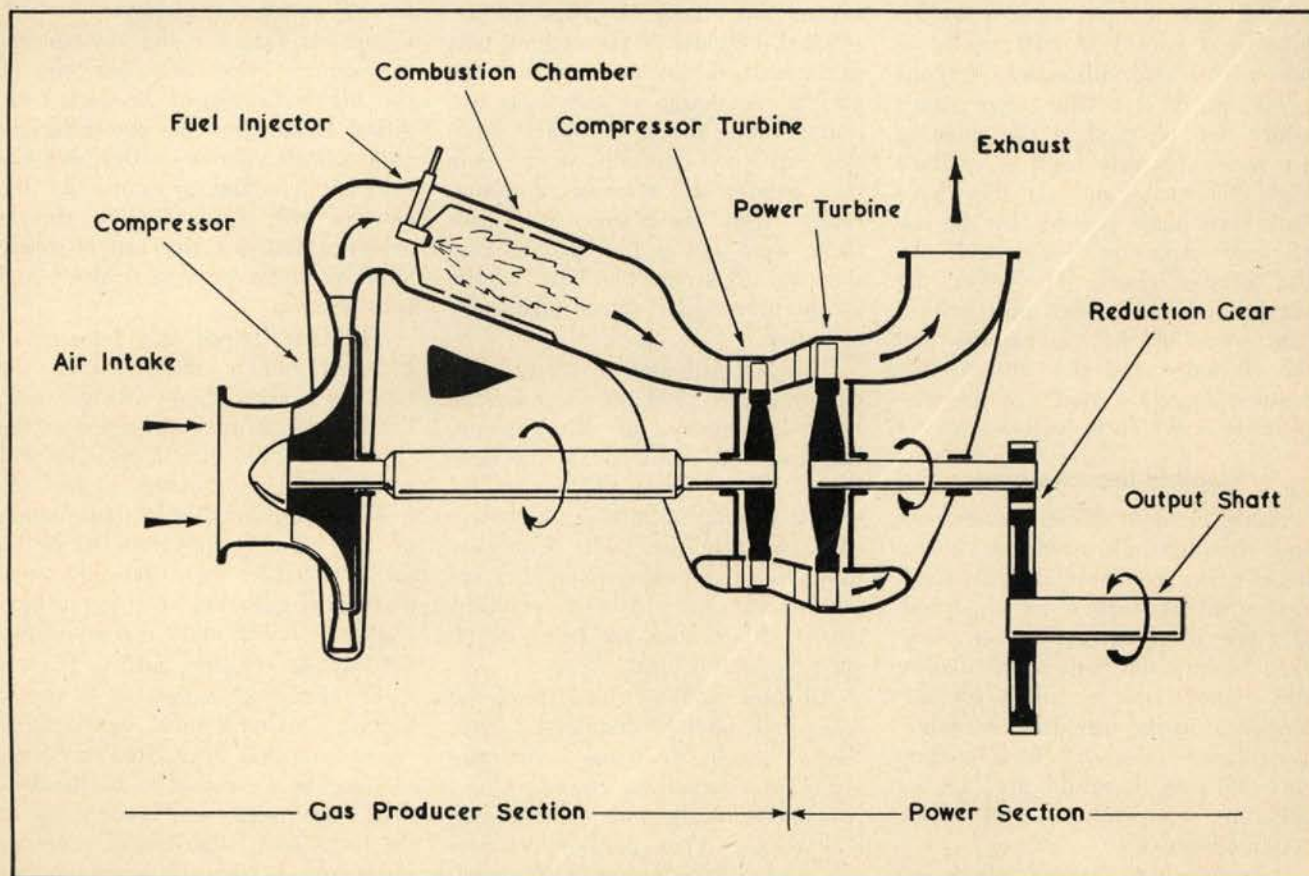


Diagram of a Typical Gas Turbine



around ten times as much. This means that all the problems associated with air intakes, louvers, filters, ducts, etc., are much more severe, particularly in armored vehicles. All these are indispensable yet the volume they occupy is apt to be very easily forgotten when comparisons are made. The large volume of air also means that there is a much larger volume of hot exhaust gases to be disposed of, and noise.

Yet another one is the fact that parts exposed to hot gases are continuously exposed to them. Unlike those in the reciprocating engine, where they are alternately exposed to the cool, fresh charge and the hot combustion products. It means that certain parts of the gas turbine—the turbine blades for instance—are running red hot all the time, while at the same time they are subjected to high stresses due to the high rotational speeds, which are of the order of 40,000 r.p.m. for the smaller units and 15,20,000 r.p.m. for the larger ones.

Severe as these conditions are, high speeds and high temperatures are essential to attaining a reasonable efficiency. Lowering the temperature would mean a rapid increase in the number of pounds of fuel per horsepower-hour and, ultimately, gallons per mile. As it is, the temperatures which can be used at the moment are not sufficiently high to produce high efficiencies and yet they have only been made possible by the use of very expensive alloy steels for the turbine wheel. The latter, the turbine wheel, is the most critical component of the gas turbine and the efficiency and the working life are very largely a matter of the temperature at which it operates.

#### Possible Improvements

At the moment efficiencies are poor and although this need not always be so it is a point which will weigh against the gas turbine for some time to come. Improvements can, however, be expected both in the quality and manufacture of alloys for turbines and in the introduction of hollow blades, through which cooling air could pass. It would allow higher operating temperatures and hence better efficiencies.

An immediate way in which the efficiency of an automotive gas tur-

bine can be improved is by the addition of a "heat exchanger" to it. In this, air on its way from the compressor to the combustion chamber is passed through a series of tubes on the outside of which flow the hot exhaust gases from the turbine. In this way heat is drawn from the exhaust gases and less fuel has to be burnt to reach any given operating temperature. Of course, this gain can only be had at a price, namely some reduction in the power available at the turbine. Ultimately this loss becomes much greater than any benefit derived from the heat exchanger. However, well short of that condition a very appreciable saving in fuel, and hence gallons per mile, can be obtained with an efficient heat exchanger. The only trouble which then remains is its cost and volume.

#### Experimental types

Of the types which have been so far released, none is fitted with a heat exchanger and their efficiencies are correspondingly poor. At their very best the fuel consumption is about twice that of a gasoline engine and three times that of a diesel. But before any hasty conclusions are reached it should be pointed out that maximum efficiencies were not the aim in the design of these gas turbines. Being the first of their kind, the aim very naturally was to obtain satisfactory mechanical operation. Before these units were run there were not a few people very skeptical about the feasibility of the whole project, let alone satisfactory operation.

The first automotive gas turbines were tried in 1950, in a car by the Rover Company, of Birmingham, England, and in a truck by the Kenworth Motor Truck Company, of Seattle (using a Boeing turbine). More recently the Laffly Company in France has produced another experimental gas turbine powered truck. Other units are being developed by several firms.

All three models named are of the basic type already described. They have a single, centrifugal compressor, twin combustion chambers and two, mechanically independent, turbine stages. They develop between 175 and 200 horsepower at maximum speeds of 25,000 to 40,000

r.p.m. and their maximum internal temperatures are around 1,500°F.

They are, as already stated, experimental units in which manufacturing costs and operating efficiencies have been secondary considerations. For that reason, and for others, any comparisons between them and existing reciprocating engines must be very carefully handled. Some hasty conclusions, based on incomplete evidence, seem to have already received a fair amount of circulation.

#### Weights and Efficiencies

One of the main practical points which has been put forward in favor of the gas turbine is that it is much smaller and lighter for any given horsepower developed. In support of this, comparisons have been drawn between one or other of the experimental gas turbines and a standard commercial engine.

The results, on the face of it, are remarkable. For instance, the gas turbine proves to be only 10 per cent of the weight of a commercial engine of roughly the same horsepower. But if a somewhat different type of engine is taken as the basis of comparison the picture changes: not a commercial, water cooled engine in which robustness, long life and low cost are of primary importance but one of the highly developed air cooled engines. In this case the power/weight and power/volume ratios become comparable. And of course, in the case of the piston engine this is achieved without the use of costly alloys or at the price of a heavy fuel consumption.

The latter is not only a matter of economy but of operations in the field for, other things being equal, the higher the fuel consumption the shorter the distance a vehicle will travel on a given quantity of fuel. As it is, current models of tanks—such as the Patton for instance—are by no means noted for their operating range and the installation of a gas turbine could not fail to make matters worse.

Constant refilling, arising from a short operating radius, is a severe handicap to tank units in the field. Apart from this, heavy fuel consumption means more fuel to be handled in the rear areas and brought up to the front, still larger service echelons and so on. And that this is not a matter affecting only the supply services was



shown clearly in France in 1944, when armored divisions were stopped not by enemy resistance but by the difficulties of fuel supply.

As has been said, efficiencies can be improved by the use of heat exchangers. But, if the fuel consumption then becomes equal to that of a piston engine the volume of the gas turbine unit becomes greater. And it is the volume of the power unit, the space which it occupies within the vehicle, which is more important than its weight. With half, or more, of the whole tank weight being due to the armor envelope it is the volume of the components, such as the engine, transmission, etc., rather than their individual weights which matter.

### Simplicity and Cost

The question of simplicity also requires careful examination. It is perfectly true that the gas turbine is basically much simpler than a reciprocating, piston engine and that it has fewer parts. But these advantages are offset partly by the complicated machining required by some of the components and hence high production costs.

It is at high powers that the gas turbine really scores—when developing 1,000 horsepower or more. High output reciprocating engines then start to become complicated while the gas turbine remains basically the same as for units of 200 h.p. At the same time manufacturing problems become relatively easier, particularly in the case of the turbine blades. The use of critical and expensive materials is still, however, necessary.

Against this it has often been said that the higher cost of materials, and the higher fuel consumption, are partly if not largely offset by the ability to burn cheaper fuels—cheaper by comparison with gasoline. And by the lower lubricating oil consumption. That is partly true and the ability to use a variety of fuels with little or no adjustment to the unit has already been demonstrated in practice. But the range of fuels which has so far been used in gas turbines can also be used in the new type of reciprocating engines, with "controlled combustion," whose development has been pioneered by the Texaco Company. So again, the advantages are not quite what they are

sometimes made out to be.

### Tank Power Plants

Enough has been said to show that the gas turbine, even improved on the existing models, would not solve all the problems which face the automotive power plant engineer and the tank designer. Its advantages are offset by a number of disadvantages, just as they are in the different types of piston engines. That there is no unique solution has been clearly shown in recent years by the number of different developments. In the United States air cooled gasoline engines have been favored for tanks for instance, but in Britain and France water cooled gasoline engines are preferred and in Russia water cooled diesels. The Germans (whose water cooled gasoline engine development has since been taken over and continued by the French) were working intensively on air cooled diesels when the war ended.

The basic requirements for a tank power plant are high power/weight and power/volume ratios—particularly the latter—good fuel economy over its whole operating range and reliability. To this must be added ease of production, which involves cost of materials, manufacturing effort, etc.

Bearing these in mind, it is difficult to see how the gas turbine can offer a better combination of characteristics, on a power unit to power unit basis, for the size of unit at present employed. Improvements are, of course, possible and some have been indicated. But that is almost equally true of the reciprocating engines: only very recently information has been released in England on a new type of diesel engine which has a specific output very considerably higher than that of any engine used to date.

The gas turbine does not require a separate cooling system, like a piston engine (though in the enclosed space within a tank it will probably require some air flow to cool the engine compartment). Neither, in principle, does it require a separate transmission; in practice it needs a fixed reduction gear to bring the speed down from around 20,000 r.p.m. to some lower, acceptable figure and a relatively simple gear box to provide a "high" and "low" speed range and reverse.

The reciprocating engine, on the other hand, does need a separate cooling system and a separate transmission, both of which absorb power and which mean more material, more manufacturing effort and more space taken up in the vehicle. Engine power is absorbed by the fans while oil coolers are a proof of the energy used up in the automatic, torque converter transmissions.

As regards the latter, the hydrodynamic efficiency of the torque converter cannot, in fact, be appreciably better than that of a turbine stage since the two are basically the same type of mechanism. So if the present trend to torque converters continues the gas turbine will be in a much better relative position. Whether that trend is in itself sound has still to be seen: so far at any rate the best torque converter transmissions are those which use the torque converter least. But as long as this trend exists it is to the gas turbine's advantage and it gives it a better chance of becoming competitive, particularly for units of 500 h.p. or more.

### Summing up

Summing up all the points in favour and against the automotive gas turbine, it is doubtful if in the more immediate future it is going to show any marked advantages as a tank power plant. For special, high powered vehicles where cost and fuel consumption would be of secondary importance it should show a better power/weight ratio, and perhaps a slightly better power/volume ratio, and greater simplicity. But the very high fuel consumption, and hence a small operating radius, would be unacceptable for general tank use.

Before the gas turbine can become really competitive in the automotive field two things are, above all, necessary: its specific fuel consumption must be considerably reduced and the use of very costly critical alloys must be minimised, or preferably eliminated.

These are serious problems. But it does not mean that they cannot, in time, be solved. Much has already been accomplished in the field of automotive gas turbines, in the space of only a few years. New developments are on the way and further progress should be watched with interest and a degree of confidence.



# 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.

*It costs a tremendous amount of money to build a tank and to train the man who will drive it. The end in view is a combination that will produce success on the battlefield. ARMOR turns to Korea and that ultimate combination—the man, the tank and the battlefield—for the translation of a compelling subject in which the man is the hinge—***COMBAT TANK DRIVING.***—THE EDITOR.*

*The writer of the following began his training in Camp Cooke, California, on an M4A3E8, continued it in Japan, and has been handling an M46 in Korea. He has been a tank driver in Company B of the 140th Tank Battalion for the past 22 months, on missions in all kinds of weather, from below-zero cold to broiling summer heat.*

Combat tank driving consists mostly of maintenance and good judgment.

I drove an M4 tank for 10 months before switching to an M46. Though there still are bugs in the cooler fan system, the M46 is a fine tank.

But you cannot "cowboy" the M46. That's one thing a driver has to remember. Some men try it, to their sorrow. I do my best to save my tank and try to help others to do the same.

The tank is there to fight. Proper steering and shifting are two important operations for drivers in combat. It's not hard to throw a track here in Korea's tough terrain. And in the hills, a driver has to be careful to select the right gear.

Some men have the idea of shifting from low into high and then from high into low. That's as bad on a tank as it is on your civilian automobile. It is liable to get you into trouble.

Experience is the big thing here. It's what we draw on in training new men.

Mines are one of the big headaches of a tank driver. We have to be watching at every moment. Of course, some of the mines can't be seen. But there is one enemy trick I've noticed. Sometimes the Reds

have placed mines in the tracks where our tanks have gone before. I have found that when they do this, they just throw a little pile of dirt over the buried mine. If you're careful, you can spot them and go around the area.

I have never thrown a track by hitting a mine. But I have thrown them by turning on a steep hill. And another time some ice in a river gave me trouble. Big rocks also are a problem. A small drop-off gives the M46 a rough ride due to the fact that it rocks so easily.

It's a good idea to hurry in and hurry out of a tight spot, but not with speed—if you know what I mean. A fast driver makes too many mistakes.

Always keep your tank ready to run. You might be called on at any hour during the day or night.

Give your tank a complete check right after each mission, and you'll be ready to go when they need you.

SGT. MELVIN R. COLLINS



Sgt. Melvin R. Collins

*The writer of the following joined Company C of the 140th Tank Battalion after entering the service, and has been with the same unit ever since. He took his basic training at Camp Cooke, California, and has been a tank driver for the past 19 months. On two of his combat missions his tank has hit mines, but he was not hurt.*

The M46 is an excellent tank to drive. It will take a pretty good beating. From what I've found, I'd say it can hold up in almost any terrain.

It is pretty slow on climbing hills, but I must admit it has climbed any I've tried. On flat ground the M46 is a fast tank and easy to maneuver.

The roads here in Korea are in sad shape. In many places creeks are used for roads. The creek beds are rocky and you have to be careful not to throw a track—especially on turns.

Every driver has to watch out for mines. The mines here are funny. The first time I hit a mine, I was the second tank to cross it before it exploded. The second time I was the seventh tank to roll over the mine before it exploded.

It is most important that you keep up the condition of your tank by performing maintenance immediately after returning from a mission.

Check the oil in both the crankcase and transmission. Tighten track connectors and grease the road wheels and idlers. Keep the right tension in your tracks. If you let a track get too loose, you'll throw it. These may seem like obvious things and pretty basic things, but you know they count out here.

Compared with the M4, the M46 is a much better tank for the driver.



The 140th Tank Battalion, which arrived in Korea with the 40th Infantry Division in January of this year, so far has not been involved in any large-scale tank-vs-tank battles. Although many traps have been baited for Russian-made T-34's, most of the actions have been "tank shoots" directed against enemy personnel and weapons positions.

Nevertheless, the 140th has struck some punishing

blows in supporting the 40th's infantrymen. In a recent operation, for example, elements of the 140th rolled right up to fortified emplacements and blasted 193 bunkers, 14 buildings, 6 machine gun nests, 3 communication trenches, and a dug-in 76mm gun.

A good deal of the credit for the battalion's smooth teamwork and exceptionally low deadline rate goes to the tank drivers.

They are very sensitive, especially in steering. The one stick for shifting and steering just about takes all of the work out of driving.

From the driver's point of view, I also like the new cross-drive transmission. It's certainly easier to operate than the old M4's regular transmission with the clutch and the two laterals for steering.

An important thing to remember, especially in combat, is to shift the M46 carefully. Before going from high to low gear, the tank should be slowed to at least 11 miles per hour. And it certainly should be brought to a complete halt before shifting to reverse.

I haven't seen the newer tanks yet, of course, but one thing I'd like to see on them would be an escape hatch with a bigger lid on it, to keep it from being blown inside the tank. We use old drive sprockets welded to them now, as an expedient, but new ones would be much better, designed for the purpose.

About all I have to say on combat tank driving is: Keep your tank in good shape, drive it carefully, and it won't let you down in a tough situation.

SGT. ALBERT H. WISCHNESKY



Sgt. Albert H. Wischnesky

The writer of the following has been in the Army since October of 1950. He has served as a tank driver in the 140th Tank Battalion during all of that time. He is presently assigned to Company B, and has taken part in a number of tank shoots with the unit. Several near-misses have bracketed his tank, but it hasn't been hit.

I am a driver on an M46 tank. However, I took basic training with the M4A3E8, and did not receive any training on the M46 before arriving in Korea. I learned the M46 from experience—which they say is the best teacher.

Driving the M46 in combat after training in an M4 is like stepping from a Model-T Ford into a new Cadillac.

Maintenance is quite a problem over here in Korea. Parts were hard to get when we arrived, and we really had to baby our tanks along. You can't cowboy tanks in this terrain, or you'll make a lot of extra work for yourself and the maintenance crew.

I like the joystick in the M46. You can drive easily. The controls are very sensitive and react to your slightest pressure. For that reason, it's fairly simple to catch on to driving, but maintenance still is your big problem.

When a fellow goes on these tank shoots, he becomes kind of jumpy when he reaches the forward assembly area. But as soon as you get rolling again you cool off and think no more about it. And you really get a big thrill out of seeing those Red bunkers fly after you've maneuvered your tank into position.

What a driver should do when going into firing position is to follow tank tracks that have been made before, if possible, but be very careful and watch for where tracks have been messed up. That probably means

there's a mine there. We have had instances where the enemy buried a 50-gallon drum of TNT and then put a mine on top of it to set it off.

Of course you should always be paying attention to your bow gunner and tank commander too. You are only one of a crew, and in combat the big thing is teamwork—in your tank and in the unit.

When driving in enemy territory, I think it's best not to use your neutral steering. In some spots there's soft ground, and in others too many rocks, and you can throw a track very easily.

Also, don't forget to watch those warning lights closely. They help you to check immediately when something's wrong.

I think the M46 is a dream to drive compared with the old M4. You can drive all day and not become tired. And that means a lot when you have long missions over rough terrain and need to be on your toes in enemy action or watching for mines.

In conclusion, I'd like to say that there's no reason for our drivers not to have confidence in their equipment. They've got the best in the world.

SGT. DALE J. MILLER



Sgt. Dale J. Miller



*The writer of the following joined the 140th Tank Battalion in August, 1951, when it was serving on occupation duty in Japan. After six months of training as an M4 driver, he moved to Korea in January of this year. Now driving an M46, he has completed all of the eleven combat missions assigned to Company C of the 140th.*

I've driven an M46 for seven months here in Korea—through mud, over rocks, and up and down hills. That tank surely will take a beating. But just because it will, there isn't any reason to handle it roughly.

Handle it carefully and you won't have any trouble. It drives and rides about as smoothly as a car.

Naturally, you have to keep up your maintenance on it. When you get back off a mission, check your tank over good. Here's a few things I always check. I make sure the cooler fan's running O.K. and that the tracks are tight. Also, the oil in the motor and transmission has to be kept clean.

Good care means good operation out on a mission. If the enemy's throwing stuff in on you, you want to be able to move that tank out in a hurry when your platoon leader gives you the order.

When we move into firing positions out on the line, I always try to pick a place with room enough to turn around, because I don't want to be cramped for space when the going is rough. But that doesn't mean I do a lot of unnecessary running around.

I think the cross-drive is fine, but

there's an awful lot of soft ground over here. For that reason, I don't use my cross-drive unless I have to, because there's a good chance of throwing a track if you try to use it in soft dirt.

If your tank is ever disabled out on a mission, and you have to dismount, stay by it if you can until another tank can pick you up.

The enemy once knocked out a couple of our tanks with AT guns and bazookas. Some of the crew took cover some distance away, while two men stayed by their tanks. We were able to pick up the men by the tanks, but couldn't get to the others because of rough terrain and they couldn't come to either, because the Reds were throwing in too much stuff.

A driver should always stick by his tank as long as possible, not only to help evacuate the tank, but to save his own life.

Boiled down, tank driving means you should keep your tank in good running condition, use common sense when driving, and stick by your equipment when you're in trouble.

SGT. CONRAD J. ROTH

• • •

*The writer of the following had fifteen months of experience in a tank maintenance section before arriving in Korea some eight months ago. For the past six months he has been a combat tank driver with Company A of the 146th Tank Battalion, taking part in several tank shoots. His tank was hit once beneath the bow machine gun, but was not seriously damaged.*

I think good maintenance is the most important thing in combat tank driving.

When you're going on a mission, you should check your tank before you leave your bivouac, and at every road break on the way.

During operation the eye should catch the warning lights on the instrument panel. The alert driver will know how his tank is operating and will spot trouble at once if a light goes on.

The M46 has special problems, different from an M4 in driving. You just can't jerk the driving controls the way you can on an M4 or you will probably break the final drives.

And when you are shifting from high to low, you have to be careful not to put it in reverse and tear up the transmission.

The terrain in Korea is rocky, muddy, and hilly. You have to turn cautiously or you'll throw a track. In driving on tank shoots you are usually buttoned up, and the country here keeps you on your toes.

When you are going through a mine field you should follow in the tank tracks of the tank ahead of you. If you are the first tank, you've got to look out for fresh or loose dirt in the road, which often means mines.

We've learned not to bunch up, or get too close together when we're firing from a stationary position.

If you have some room to move around in, you aren't as likely to be hit. Routes into and out of a position and a good alternate position are as important as the manual says they are.

The M46 is the best all-around tank we have here. It will take a lot of punishment, but the driver has to know quite a bit about the tank before he should drive it.

I think maintenance is still the most important thing. The cooler fan, engine oil, transmission, etc., should be checked often. The tank should be greased after each run, and care must be taken to keep the fuel clean and free of water.

If a man takes care of his tank, he will have confidence in it. That means he'll go out on a shoot with more self-confidence and he'll be holding up his end in the tank crew. Here in combat we know the importance of crew teamwork.

SGT. THOMAS G. FAIT



Sgt. Conrad J. Roth



Sgt. Thomas G. Fait



The writer of the following has been with the 140th Tank Battalion since he entered the service 22 months ago. As a Company A tank driver, he has been in several shoots out in No Man's Land, and his tank also has been used for infantry support and stationary fire missions. On one mission his tank struck a mine, but he was not injured.

I believe that maintenance is the first thing to look after in combat tank driving.

A driver should be mechanically inclined. He needs top training before combat. He should have a good idea of what is wrong if something causes trouble in combat. That's where experience counts. He may be able to fix it himself. But if he isn't able to, at least he can tell his company maintenance so they can repair it as quickly as possible.

One thing that should always be checked before and after a mission is your track suspension. That's especially true here in Korea where there is so much poor terrain. Your tracks have got to be tight at all times.

In our sector of the front, we have



Sgt. John N. Cogswell

to ford streams and small rivers constantly, and that's hard on lubricants. After each mission our tanks are greased thoroughly. In the kind of hot weather we're having now, air cleaners must be cleaned after each shoot because of the dust.

On a tank shoot a driver should keep changing his position, so the enemy will not get a chance to zero in on him. If he knows his business he will have his routes all selected, and will have several good positions

ready. And he knows the importance of dispersal.

The Reds, of course, make full use of mines for antitank purposes, and we must look sharp all the time. Mines can be tricky. For instance, on one occasion I was the third tank in column, following in the same tracks the others had made, when my tank set off a mine.

Some of the enemy mines vary in the amount of pressure it takes to set them off. From what I've seen, I don't think the enemy in our sector uses any certain pattern for mine fields. It's just a matter of being wide-awake at all times.

To some, a tank may seem to be a big steel monster. But just like anything else, it isn't made to go forever. The M46 is a fine tank and it will give you good service if you treat it right.

In summing up, I'd say once more that maintenance is the driver's most important job. Sometimes you can't tell when you'll run over a mine, and sometimes you can't tell when you'll be shot at. But if your tank's in good shape, your chances of coming through are much higher.

SGT. JOHN N. COGSWELL

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marching along to nail the antitank squads"*

## Tankers at HEARTBREAK

by CAPTAIN SAM FREEDMAN

**G**IVEN the right time and place, the tank battalion, in support of the regimental combat team, can do wonders in a tight situation, depending on the intrepidity of the tank crews, the ingenuity of the planners, and the degree of coordination of the combined army team. Of the latter, much remains to be brought to light for the consideration of future tactical planners. It has been shown in Korea, where everything has been done under extreme difficulties of supply and terrain, that no single element of modern combat is so important as the proper functioning of all component parts that go to make up the combined arms team.

Thus far, the most striking phase of tank warfare in Korea is probably that of trafficability, for rarely in combat annals have tankers been required to work in territory seemingly so poorly adapted to tanks. But quite often we find that adverse circumstances can be turned to advantage. For despite the heartbreaking struggle to move tanks over seemingly impenetrable barriers of trackless mountain wasteland, American and British tankers have shown conclusively that

the tank is a versatile weapon that can be put to good use in any situation or terrain where another gun will do some good. The swift mobility of the modern American tank, with its greatly revved-up fire power and protection from small-arms fire makes a powerful weapon.

Since the beginning of the Korean campaign the comment has been oft repeated that "Korea is not tank country." The question might well be asked: Just what is tank country?

### Tanks Are Versatile

There are those who assume that ideal tank country is broad, rolling terrain, where masses of tanks can roam at will, searching out enemy tanks and clashing with them head on. That, of course, is a fallacious idea of tank warfare. We, as tankers, know that tanks must be properly used to get the best out of them. To hide a tank at the edge of a woods and lie in wait for an enemy tank column, is good employment of tanks. To catch an enemy supply column at close quarters and to rake it from stem to stern with small arms and high explosive fire, is also highly effectual. To bring up tanks to blast out enemy bunkers and other fortifications, is to use tanks with good effect. Put them in defilade at night, and you have fine artillery.

Tanks can be employed in many spectacular and highly effectual ways. They are being so used in Korea. In fact, the manner in which tanks have been employed in Korea is to

an important extent changing the concept of tank tactics and capabilities. Korean experience has taught planners to enlarge the scope of tank activities in their projected tactics. Wherever infantry is employed, tanks are in support when any avenue of approach is available. The role of the tank in this regard must never be overlooked. The tank is a close-support weapon of incalculable value, giving momentum to the infantry assault to keep it rolling in the right direction. The doughboy likes the tank to move forward with him, and his trusty rifle is a guarantee against attempts by enemy antitank squads to knock out that tank. It takes hard shot, usually, to knock out a tank. In Korea the enemy has not always been lucky enough to have a self-propelled gun handy with solid rounds. It's hardly cricket to move in on them when all they're slinging at you is HE, but in such a situation the enemy is taught the awful reality of what Sherman said. Even in such situations, however, we've lost some men through a dislike for "buttoning up" in action. Mortar rounds are known to have fallen into open hatches—pure luck rather than superb marksmanship. Tanks should be buttoned up in the impact area.

While it is true that employment of tanks in Korea has been considerably hampered on the mountain front north of the 38th parallel, the ingenuity of aggressive planners who won't take "no" for an answer has resulted in the discovery of means to

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CAPTAIN SAM FREEDMAN served with the 72d Tank Battalion on the X Corps mountain front, and later on the staff of X Corps. Stricken with a heart ailment while at Heartbreak Ridge, he was hospitalized. Discharged recently from Walter Reed Hospital and retired for disability, he has returned to journalism and his former post with the Los Angeles Examiner.



bring up tanks for swift and telling strokes that have broken the back of enemy resistance in strategic places like Bloody Ridge, Heartbreak Ridge, and the Punchbowl. In such actions, the regimental tank companies and the divisional tank battalions have proven their worth by disrupting enemy strongpoints, destroying communications lines, and slaughtering thousands by machine guns and shelling.

Korean combat has proved conclusively that the tank, with its powerful main armament, mobility and protection from small-arms projectiles, is a potent adjunct of the regimental combat team. Planners find great tactical latitude when tanks are available in mass for employment in the attack or defense.

Infantry moves forward to the attack with spirit and confidence and a more marked willingness to "give 'em hell" when tanks are moving with them. If enemy tanks appear they do not have the effect of slowing an advance. Friendly tanks take them on, and the advance can go on to the swift conclusion desired. Enemy emplacements, pillboxes and bunkers are quickly neutralized by powerful tank guns, when troops in such instances might otherwise be pinned down.

A judicious appraisal of terrain and tactics in Korea, and what has been done by proper reconnaissance and tactical utilization of tanks leads to the conclusion that there are dis-

tinct advantages in terrain where trafficability is reduced to the minimum by mountain barriers and lack of roads. In Korea we learned to utilize stream beds, mountain passes and ravines with substantial and favorable results.

### Tank Surprise

There have been times when the enemy has been caught off his guard by swarms of tanks appearing as though out of the earth itself, when the enemy could see no avenue of approach. An enemy that is not expecting attack is always a prime target. For this reason the best time for a tank thrust is after a lull, when the enemy expects no attack. Such moments must be carefully timed and the operations executed deftly and with daring. This type of operation in Korea has been highly successful in most instances. In fact, there is good reason to believe that enemy initiative has been discouraged at critical times by the appearance of our tanks in mass at places the enemy believed inaccessible to armor. In one such instance, a platoon of tanks detached from the 72d Tank Battalion in the Sataeri valley so surprised enemy infantry at close quarters that the Chinese Reds stood behind their emplacements too paralyzed with amazement to fire their weapons. Many actually stood there grinning in bewilderment as the tank gunners opened up with machine guns and mowed them down with scythe-like

effect. Some of the tankers, their first time in combat, clambered out of their tanks and took rifles engraved with the hammer and sickle from the hands of the Reds they had just slain.

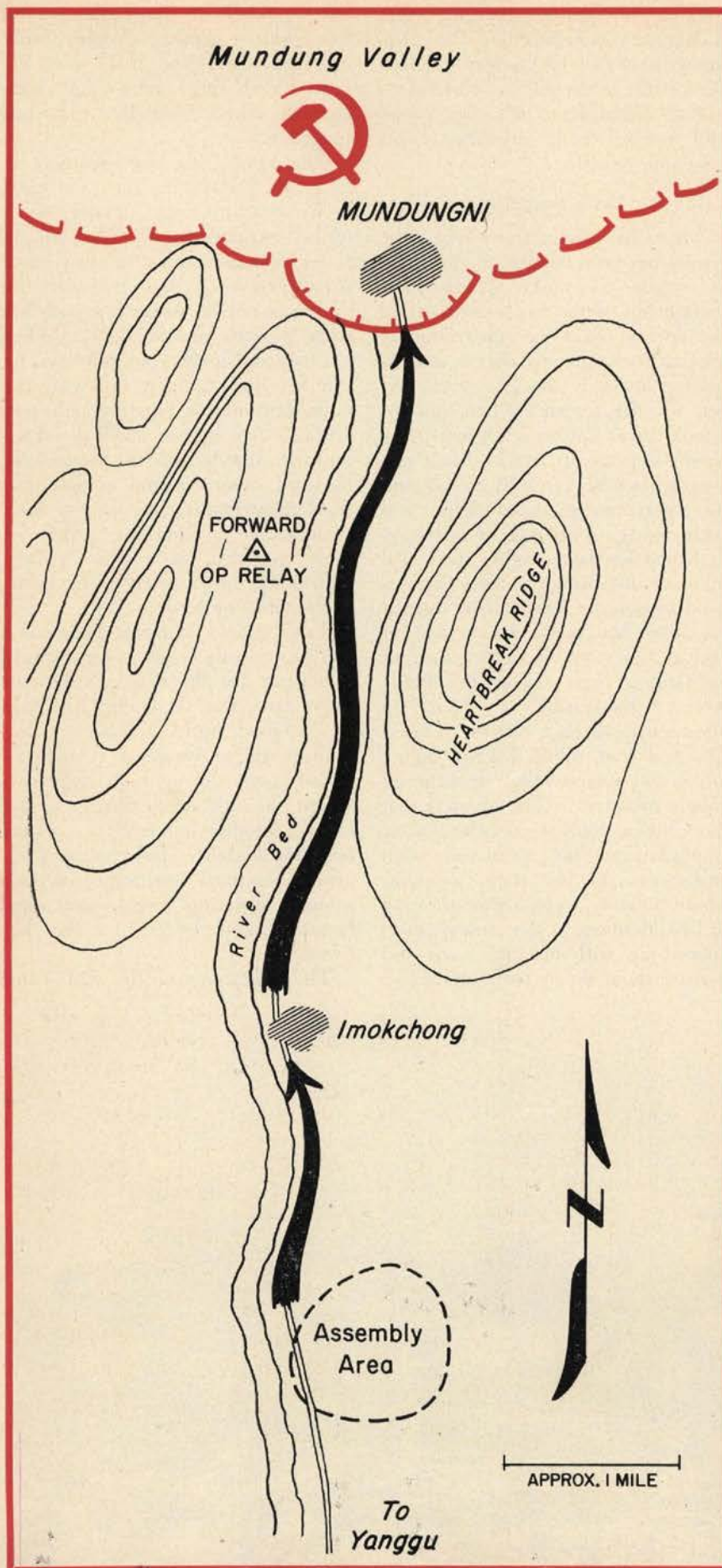
The repulse of a powerful tank attack calls for the mustering of powerful weapons, and daring, well-trained antitank squads. We found in Korea that substantial infantry cover is required in any tank foray, for the daring of enemy antitank squads has been proved beyond doubt. They are rendered ineffectual, however, by rifle fire from infantry following the tanks beyond the bursting radius of artillery and mortar shellfire which tanks invariably draw in the assault. Forward observers and communications relay teams must choose their locations away from the avenue of tank approach, as enemy artillery and mortar fire is likely to be heavy as the tanks move up.

Tank attacks in Korea have come off successfully with comparatively few losses for the simple reason, in many cases, that the enemy had little or no "hard stuff," and were using such powerful weapons as self-propelled guns firing high explosive which did little or no damage to the tanks. Another important factor has been the inability of the enemy's aggressive antitank squads to penetrate infantry covering forces, sometimes battalion and larger, in the big thrusts.

The operations of the 72d Tank







Battalion, which aided in shortening the campaign for the high ridges on the X Corps mountain front, must go down as classics of armored offensive tactics, under almost insuperable difficulties of terrain. Yet, it was precisely because the enemy believed his positions beyond Heartbreak Ridge to be unapproachable to tanks that the operation met so marked a success.

The tank tactics at Heartbreak Ridge offer a case in point. The major tank attack was "Operation Touchdown," so named because it involved a long end-run around the left flank of the enemy at Heartbreak to strangle his line of communications which had its apex at the northern entrance to the Mundung valley. It was a vigorous, penetrating thrust, brilliantly planned and daringly executed. Every tank in the battalion rode to the attack in 68 Shermans loaded with HE and hypershot, and carrying extra ammunition for the battalion of the 38th Infantry marching along to nail the antitank squads.

The big thrust, which took place on October 10, 1951, marked the finish of enemy action at Heartbreak Ridge. Any plans the Reds may have had to counterattack again for that prized ridge, were rendered "kaput" by the 72d's tankers. The troops of the 38th, 23d and 9th Infantry regiments, aided by United Nations battalions, had finally shattered enemy resistance on that blood-drenched mountain. The tankers had finally broken through, after heroic work by the 2nd Engineers to prepare the way for them through a winding creek bed of the Han River.

The attack itself came at a most opportune time. It caught the Reds completely off stride. The results were all that had been intended. Alert 2nd Division and X Corps Intelligence were aware that approximately a division of fresh Chinese troops, hastily recruited and trained at Tientsin, was to replace the decimated North Korean Red forces at Mundungni, about six miles north of Heartbreak Ridge.

The tank column took off at 0600 on a split-second schedule, guided from an OP far to the front, where two 72d Tank Battalion staff officers had set up a radio relay station. From this point the officers could observe the floor of the Mundung valley, re-



port the presence of enemy forces, guide the tanks into action, and bring down supporting fires as needed.

A tank is just the place for a man who likes hard slugging. You've got a good, big gun, and can move it handily where it will do the most good. The hardy lads of the 72d, enjoying the action after their long wait while the Division engineers were smoothing down the route, virtually stuck those tubes down the throats of the Reds and made them say "ah."

### Team Coordination

While the Chinese Reds are notorious antitankers, showing fanatical daring and skill in disabling tanks, the 72d on this occasion had little to worry about on this score. So close was the coordination of tanks and infantry, that more than a battalion of infantrymen covered the tanks with rifle and automatic weapons. Not a satchel charge was thrown. And few mines were encountered along the approaches to Mundungni—another indication of the overconfidence of the Reds.

Enemy artillery opened up on the tanks at long range, and the valley floor was dotted with the white puffs of mortar bursts. The enemy threw everything it had but its chow-mein-laden wheelbarrows. It was high explosive, thus had little effect against the armor of the tanks. The dough-boys, battle-wise, steered clear of the tanks which drew the fire, but alert to oblige any Reds overeager to join their ancestors.

It may appear singular that the tanks were able to maneuver freely through a critical battle area devoid of the mines which so often plagued them elsewhere. But again there is pointed up the fact that few mines had been planted hereabouts by the Reds, so confident were they that the American tanks could not negotiate the mountain passes.

The one road through the Hongchong, Imokchong and Paem passes leading to the Mundung valley had been virtually obliterated by an elaborate pattern of cratering done with the avowed purpose of blocking a tank thrust. It was the final action of the Reds in the withdrawal from their costly defeat at Heartbreak Ridge.

That the 68 Shermans of the 72d Tank Battalion made this run from below Hongchong—a distance of some eight miles, was a triumph of ground reconnaissance, aerial observation, engineering skill, and infantry coordination. To this may be added the judicious staff planning and coordination at division and corps levels.

The action didn't attract much attention in the press at the time, because the war correspondents that day were over at the 1st Marine Division covering something the PIO there had cooked up.

There isn't any doubt that the presence of armor en masse, battering through the Red "Gibraltar," had a salutary effect in quieting down this sector and resulted in the taking of several lesser ridges skirting Heartbreak Ridge. The enemy not only was aware of the presence of powerful armored opposition, but it had been convincingly demonstrated that Eighth Army commanders knew how to employ that armor. It was quite evident that the enemy was mystified that the tanks could get through at all despite the condition of the passes.

How then is it possible to bring up 68 tanks with the only road through the mountain passes smashed to smithereens by hundreds of tons of explosives? It was all quite simple. The Reds, with typical Communist stupidity and abysmal failure to perceive enemy capabilities, had overlooked the rocky gorge of the Han as an avenue of approach. True, the boulder-strewn bottom of the gorge didn't even remotely resemble the smooth fairways at Fort Knox, but to the reconnoitering tankers they had spelled "avenue of approach." They called up the engineers after careful study of the route by days of reconnaissance virtually within the enemy field of fire.

It was determined that the roadbed from Imokchong to the Mundung valley would be smoothed down to the trafficability required.

The 2nd Engineers lost several officers and men while working under fire on that project, but on the appointed day, the job was done.

It was a triumphal procession through the river gorge. Tank after tank negotiated that winding labyrinth of rock, sand and water. As the lead tank emerged into the sun-

washed Mundung valley, the first of the enemy mortars exploded. From then on, it was a noisy and spectacular affair, with tanks in line rolling on to the objective—the enemy stronghold at Mundungni. Not a tank halted until the goal was reached.

What targets rose to the view of the keen-eyed young gunners as they came within gunshot of the town! The Reds took terrible punishment that morning, fleeing in panic as the 72d's armor rolled through the town and a couple of miles beyond.

One tank was lost that day—the lead tank, which was firing rapidly as it rolled, with a hatch open. One mortar round—pure chance—dropped into the hatch and exploded, killing three men.

The tanks returned the next day, and for two more days after that, repeated their performance, thoroughly reducing the town and causing the Reds to withdraw.

The operation clearly indicates that the presence of powerful armored forces in a strategic area will have a deterring effect on enemy intentions, and tend toward neutralizing the area in general, at least in the type of warfare typical of Korea, a kind of warfare dictated by the terrain.

### Experience Teaches

The books and the schools have much to offer the tanker in preparation for his triumphs on the battlefield, but there isn't a doubt in the world that experience is the best teacher in tank warfare as in so many other fields. All in all, the lessons of tank combat in Korea will make it possible to round out still further the training of future tankers. Those lessons must be utilized so that student tankers may gain from the combat experience of others.

Successful actions, like the one described in the foregoing, have their roots in proper planning, coordination and teamwork. Technical skill must utilize these for its ultimate triumph. These are the elements that must be emphasized. The lessons of Korea will help win battles again, if it is necessary to fight another war. Armor is better than ever, and its contribution to success of the regimental combat team has once more been proved.



# Preventive Maintenance — A COMMAND RESPONSIBILITY\*

by MAJOR GENERAL I. D. WHITE

**I**F there were an oracle who could inform the world that real peace is around the corner, this article would probably never be published. Preventive maintenance of equipment about to be relegated to the scrap heap for conversion to ploughshares would be false economy. But, no one of any responsibility can predict total demobilization in the near future and our equipment will continue to cry for Preventive Maintenance with the voices of every ungreased spring and unoiled bearing.

Preventive maintenance is not a modern invention. Commanders have always been charged with insuring that all the elements of their commands, human and material, be ready and able to accomplish an assigned task. This can be done in only one way—by everlasting interest of every member of the chain of command—in short, by recognizing that maintenance is not the job of the technician, important as he may be, but the job of the commander. Preventive maintenance is a command responsibility.

As the foundation of our maintenance system rests on the first and second echelons, this article will be limited to a discussion of organizational maintenance and the five factors which I believe are essential to successful maintenance: (1) Command responsibility; (2) Supply, to include proper supply procedures and

unit basic loads; (3) Training of users, specialists and commanders; (4) Planned preventive maintenance programs, and (5) Continuous supervision through staff visits, command inspections and command action.

## All Command Levels

The title of this article reminds us that the key to preventive maintenance is command responsibility. Every member of the chain of command must know that he is responsible for the preventive maintenance of his entire command. The weak links in the chain of command so far as preventive maintenance is concerned are in the lower echelons. The junior officers and non-commissioned officers must realize that maintenance is their direct command responsibility. Corporals, sergeants and lieutenants are the commanders in direct charge of the tanks, radios, weapons, equipment and men who must be welded into a successful fighting team.

Many commanders recognize their responsibility for maintenance, yet they do not know what to do about it.

They remind me of the young and inexperienced MP who was posted at the entrance of a large headquarters with instructions to allow no one to enter without a special identification card. He got along fine until a General drove up who had forgotten his special card and who became exasperated at his inability to talk his way in. Finally the General said to the driver, "Don't pay any attention to this fellow—drive on in!" With that, the MP drew his pistol and said, "General, I'm kind of new

at this sort of thing—who do I shoot—you or the driver?"

Many commanders, like the MP, do not know whom to shoot in order to get good maintenance. Frequently they aim at the wrong man—the technician, instead of the commander. Armorers, supply sergeants and motor sergeants are technicians whose command functions are limited to their own technical sections. Motor sergeants are *not* in charge of drivers or driver maintenance. Armorers should *not* be charged with responsibility for the cleanliness and care of weapons assigned to using crews or individuals. In like manner, supply sergeants are *not* responsible for unreported shortages in individual equipment.

When the chain of command from top to bottom is held fully responsible for the completeness and maintenance of equipment, you will find little opportunity for misunderstanding due to divided authority.

I have found that the weakest link in the chain of command is the link next above the individual rifleman, crewman, or driver. This applies not only to maintenance but to all military matters including discipline, conduct, appearance, individual equipment and, of course, the proper care and use of equipment. If this initial link is held responsible for proper performance of his duties, an organization is well on its way to success in all its operations.

Do not be tempted by short cuts in the chain of command. It may appear

\*This article is based on General White's recent address to the AFF Commanders' PM Course at Aberdeen Proving Ground, Maryland.

MAJOR GENERAL I. D. WHITE, until recently commander of The Armored Center, Fort Knox, Kentucky, is now Commanding General of our X Corps in Korea.



easier and quicker to have the motor sergeant inspect driver maintenance, but in the long run it impairs the effectiveness of our non-commissioned and junior officers. Too often such short cuts are taken because commanders lack confidence in their subordinates. Teach them how to inspect. They will become enthusiastic when they gain confidence—the confidence of knowing what is wanted.

The second factor in good maintenance is supply. The days when American ingenuity aided by a little baling wire could keep anything running are long past. Today a multitude of spare parts and tools are required to keep our modern equipment functioning. The best trained and organized mechanics are helpless without tools and supplies to do their job.

Supply availability is a fluctuating thing—at times it is better than at others. We must be realists and recognize that the supply agency, civilian or military, that always has a hundred per cent stock to fill your needs either doesn't exist or is hoarding and not serving its customers. We must base our plans on minimum supply availability and then utilize our supply resources to the maximum.

Commanders at every level must go to the very end of the supply pipe line to search for the solution of supply problems. Far too frequently the commander of the unit with a high deadline rate is found complaining his troubles on tool and part shortages. Such shortages *may* be a factor. But more often than not essential parts have not been properly requested. When supply shortages are claimed as the excuse for poor maintenance, I suggest that requirements be carefully checked against validated requisitions. In many cases it will be found that required parts have never been asked for.

I use the phrase "validated requisitions" advisedly. We are not looking for mere copies of property issue slips. A valid requisition is one that has been received and understood by the expected source of supply. Most technical services return a copy of the requisition marked with a credit voucher number or CV number. It is well to remember that a requisition with a CV number indicates that the needs of a unit are known to the person whose job it is to supply them.

Approved and tested supply procedures are explained in elaborate detail in technical manuals and other literature. The vast world-wide military supply system is based on requests from the user—a requisition—for frequently needed items. To do this requires proper administrative procedures and stock record cards at the unit level.

Supply and maintenance must be tied closely together and looked upon as two sides of the same street. A supply failure frequently indicates an excessive demand which may, in turn, be traced to poor maintenance. Like the taxpaying business man, a good unit commander must keep himself informed as to the consumption rate of spare parts and supplies in his command. Preventive maintenance is supply economy and lessens the demand on supply sources.

### The Basic Load

When dealing with supply as an aspect of preventive maintenance, we cannot overlook the unit basic load. At home we would consider it the height of folly to make a daily trip to the drug store to buy one razor blade. To obviate the need for such a wasteful practice, we usually establish at the user level a "basic load" of razor blades—also soaps, cleansers, and other daily necessities for the household.

That common sense practice is equally applicable in the military unit. When the housewife observes that the basic load of razor blades is not being used because her husband now uses an electric razor, what does she do? If she is not thrifty and observant, she allows the blades to remain in the medicine cabinet until they are rusty and useless—then throws them out as a total loss. If she is thrifty she disposes of them and the now unneeded razor to charity or more likely, to some indigent relative of hers to whom she gives her husband's old suits.

Like the thrifty housewife, the military commander must guard against the accumulation of excesses—items that are frequently accumulated in pack rat fashion when no real need exists for them or are retained when there is no further requirement for them. The early disposal of excesses is an important phase in "cost consciousness" and "supply economy."

In supply matters, command interest and responsibility are necessary if complete results are to be achieved. Frequent and aggressive follow-up through command channels is necessary to insure prompt supply. Two-way liaison must be established between the user and the supplier. The supplier, who should be instilled with the same concepts of customer-dealer relations as are held by successful mercantile firms, will assist in the simple solution of many problems when he knows of them.

How are we going to use the supplies of spare parts and tools we receive? Here is where limited technical skills are required—the skills of the user, the organizational mechanics and the supervisor. Maintenance skills are acquired by experience and training. But maintenance training is not in a water-tight compartment. Preventive maintenance must be an attitude that permeates all training. Training time must be provided for maintenance. The skilled gunner whose ignorance of cleaning and lubrication procedures results in a deadlined or inaccurate gun is of little value to the fighting team. Whatever equipment is used, instruction and time to maintain that equipment should be concurrently scheduled.

"By the numbers" training of crews and users is an effective way to conduct elementary training. Such training can be repeated on occasion during scheduled "Daily Maintenance Stables" in much the same manner as "Standing Gun Drill." The 3rd Armored Division at The Armored Center has adopted a complete and precise system for "by the numbers" training in tank maintenance. It is bringing good results, not only with trainees, but with cadremen as well.

The bulk of our specialist training is done in service schools. However, rapid turnover of personnel requires much specialist training at the unit level, which is usually of the "on-the-job" type.

American industry leads the world in effective on-the-job training, because that training is planned and supervised—planned to include all knowledge and experience required by the student craftsman and supervised for completeness and quality. On-the-job training programs that lack supervision and planning often



degenerate into the feudal apprentice system intended to furnish cheap labor. Any training received by the apprentice under such a system is usually incidental, depending on luck or the ability of the craftsman teacher. As often as not the apprentice learns the poor practices of his teacher. Putting a couple of men on duty with the motor sergeant will not insure that they will become good mechanics. Good on-the-job training requires planning and supervision.

In my discussion of training I have purposely left to the last the one phase of training that can be the key to the success of the entire maintenance program—that is the training of supervisors, training the chain of command, the non-commissioned officers and junior officers, upon whom we must rely for success.

As with the average American soldier, junior officers and non-commissioned officers are usually willing, even anxious, to do a creditable job if they only know what is wanted and how to achieve it. When faced with the supervision of maintenance, these young commanders too frequently hide their ignorance by pleading that maintenance is technical, requiring technically trained supervisors. Nothing could be further from the truth. Preventive maintenance is simply hard work—hard work in cleaning and lubrication, in tightening and simple adjustment, in the replacement of minor accessories and assemblies.

Involved technical skills beyond the common-sense know-how of any man worthy of the command of military equipment are seldom, if ever, required. A sanitary engineer is not needed to supervise and inspect a latrine, nor is a hotel chef necessary to supervise a mess. But in both cases, as with all maintenance activities, the immediate commander must know what is desired and how to inspect for it. To do this requires a simple training program for the chain of command. If officers and non-commissioned officers are taught the standards to be attained, and simple inspection techniques, they will soon achieve these standards. A simple title for this training is "How to Inspect."

I have discussed command interest and responsibility, supply procedures and basic loads, and training of users,

specialists and supervisors. How can we tie these into a smooth preventive maintenance team? If there is a simple answer to that question, it is "Command Responsibility and Supervision." Success in preventive maintenance, as in all other military fields, springs from the personal interest and enthusiasm of the commander—be that commander a corporal or a general.

As a means to inspire that interest and enthusiasm throughout the chain of command, the US Constabulary put on an all-out preventive maintenance campaign. It borrowed much of the ballyhoo of advertising in the business world. As with good advertising, it was simple and repetitive. The catch phrase, capitalizing on radio advertising, was—PM/MFP—Preventive Maintenance Means Fine Performance. For each of the twelve weeks of the campaign a single theme was selected—one week, cleaning; another, lubrication; a third, tire care. The point of emphasis was everlastingly confronting every member of the command. This was done with singing commercials, comic strips, colorful posters, training programs and special "inside dope" to company commanders on how to inspect for improvement.

Although such a campaign is spectacular, it will not in itself improve maintenance without continued command action and interest through normal supply channels.

The everlasting interest of the chain of command, using command channels, is the framework upon which all maintenance programs must be built. While those whose extra efforts result in success should be commended, commendation should not exclude condemnation. A subordinate commander who cannot maintain his equipment, even though he may be successful in other phases of his mission (which is seldom the case) should be relieved. Such action should be taken only when he has been given all necessary help, from all levels, to which he is entitled.

I do not mean that such help should include performing work that is rightfully his responsibility and for which he is provided with adequate means. Too frequently commanders call on higher echelons to perform work that is an organizational function. I prefer the attitude of pride

in a unit's ability to keep its own equipment in satisfactory operation.

A means that expresses my ideas on commanders' responsibility, which was used with some success in the US Constabulary, was a letter individually addressed to commanders of each battalion and larger unit. The command letter was backed by a circular prescribing action to be taken when a unit was rated "Unsatisfactory." I quote part of this circular, which was considered most effective.

"When a unit receives an 'Unsatisfactory' rating on a command maintenance inspection, it is an indication of improper use of time allotted to maintenance or improper supervision by the chain of command or both. The correction of the conditions which result in the rating of 'Unsatisfactory' will be accomplished, insofar as is practicable, immediately after the inspection, during non-training time after regular working hours, and under the active supervision of all members of the chain of command.

"In the event that any unit is found to be unsatisfactory in any phase of any command maintenance inspection, that portion of the inspection team concerned and the team captain will remain with the unit until existing deficiencies are corrected to the fullest possible extent. This corrective action will start immediately after a finding of unsatisfactory and will continue on *non-training time* until deficiencies are corrected and a re-inspection performed. During this corrective period all members of the chain of command will attend and actively participate as well as supervise action taken.

"The instruction and command maintenance team will assist during this corrective period in an instructional and advisory capacity."

(Editor's Note: The concept of requiring inspectors to instruct inspected units, which was published in the quoted form in early 1950, has since been incorporated in official doctrine, setting up an instructor-inspector service by the technical services in their relations with using organizations.)

What did we accomplish with this all-out drive on maintenance in the Constabulary? First, every member of the chain of command began to



realize that preventive maintenance was a soldier's job and not a job to push off on a hired German. Second, average vehicular and weapon deficiencies were cut in half within six months and continued to decline. Deadlined equipment rates were reduced as much as two-thirds and the unsatisfactory units were raised to a more acceptable standard.

The US Constabulary preventive maintenance program was based on command responsibility, proper supply procedures and basic loads, and training of users and commanders. It was a planned preventive maintenance program backed by frequent staff visits and topped with personal command supervision at all levels to cultivate the essential ingredients of good maintenance—command responsibility and command interest.

At The Armored Center at Fort Knox we are faced with a maintenance situation that is complicated by the ever-changing personnel of a training installation. This army-wide problem is not unlike the situation we all must face in event of mobilization. Instructors and cadremen are selected and trained but before they reach maximum effect in training students and trainees they either leave the service or are levied for other assignments. Yet the trainee load continues on schedule.

Meeting this challenging training problem requires the most vigilant command supervision at all levels. To assist squad, platoon and company commanders a PM campaign is being put on at The Armored Center that is intended to cultivate the minds of all at Fort Knox with the only solution to good maintenance—preventive maintenance—a command responsibility.

The military is merely one strong muscle of America's might. As a tax-supported army we must come to our fellow citizens with clean hands, able to point to an austerity program recognizing the facts of economic life. Mineral deposits go down just so far, people produce just so much before the end is reached. "Infinite" is no longer a safe word to use in connection with natural or industrial resources. Victory will go to those armies whose commanders back up the courage of their trained men with tools of war kept sharp by preventive maintenance.

## Arms and Men

*The following appeared as a feature editorial column in a recent issue of the New York Herald Tribune and is reprinted with the kind permission of that paper.*  
—Ed.

Labor Day is by no means an inappropriate moment to consider one now rather large class of labor—most of it highly skilled and specialized—which has no union organization but which often works very hard indeed and to which this country owes a great deal.

One can find out something about it in the service magazines—a small group of modest periodicals which might profitably be read by a much wider audience than they usually achieve. The service magazines are the trade journals of war. Few Americans think of war as a trade, despite the fact that over three and a half million of their sons, brothers, fathers and cousins, plus a few sisters and aunts, are at present engaged full time in this occupation. Yet a trade it is, in some ways like any other.

In the more stately examples of these publications, such as "Ordnance" or "Aviation Week"—both produced more for the industry than the uniformed forces—or "Naval Institute Proceedings" one does not quite catch the flavor. But in such slimmer, if authoritative, magazines as "Combat Forces Journal," "Marine Corps Gazette," "Air Force," or "Armor" (successor to the old "Cavalry Journal") one comes up against something rather disturbingly real and impressive.

Here is the technical literature of war, the trade journals of men who have been, are or may soon be confronting some life or death crisis on a Korean hillside or eight miles above an air training base. They are much like other journals of the kind—some personalities, a bit of humor, discussions of technical ideas and innovations, letters to the editor, suggestions as to how to meet shop problems and how to get ahead in one's profession. There is only one marked difference. The shop problem is apt to be of such a kind that if it is not mastered the workman will be dead within a few seconds; getting ahead in the profession often means physically advancing (and staying alive) over some mortar-swept terrain or getting a first shot into an enemy tank before the enemy has a chance to get one into

by WALTER MILLIS

yours. These are peculiar and rather awesome skills.

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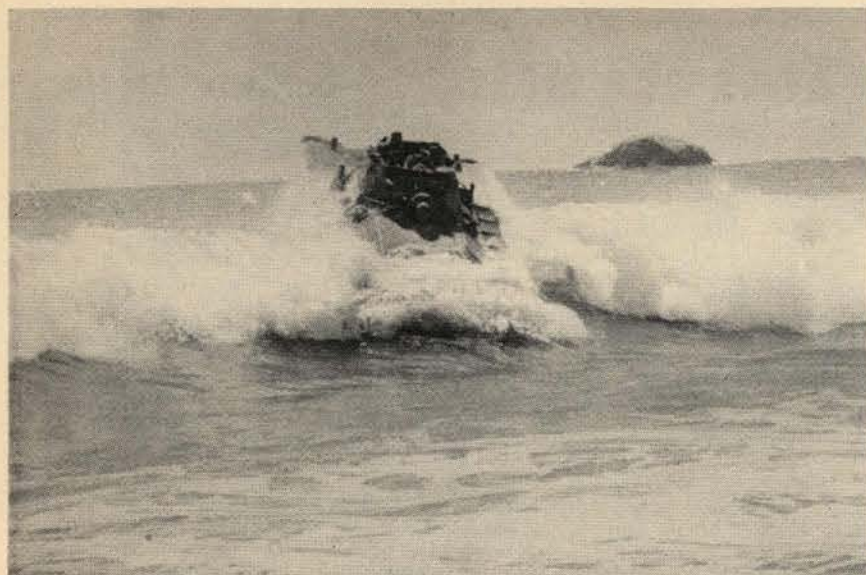
Suppose yourself, for example, in command of a tank platoon in Korea; a mine blows half the wheels and track supports off one side of one of your vehicles. What do you do? The answer, according to "Armor," is that you break the track, hook up a shortened section of it around the remaining wheels and tow the vehicle off. If "time is a major factor" (which means if you are being shot at) you use quarter-pound blocks of TNT to break the track. From "Combat Forces Journal's" notes and articles one can learn a lot about the way battles are actually fought—not the big, impersonal battles that show up as broad arrows on the newspaper war maps, but the company and platoon size scraps and firefights out of which the big campaigns are made. "Air Force" will discuss the problems and something of the technique of combat at 40,000 feet. And so on for all arms and services.

Modern combat in all its many forms is a highly skilled and technical as well as a deadly trade. It has its power tools—machine guns, artillery, vehicles—and its problems of management, discipline, worker psychology, like any other industry, but they are all grimly specialized against its own unique background of death and wounds. It is true that probably a large majority of those now wearing the uniform are unlikely to go through combat; but many have done so and many more are likely to in the coming years, while all must be trained to the business.

\* \* \*

We have to accept the trade of war as one of the normal occupations of our times for doubtless a long period to come. It seems certain, at least, that we must maintain large standing military forces indefinitely; and it is not unlikely that we shall have to be prepared to use them in "little" wars from time to time, if their influence is to be effective in preventing the global war. This is a new situation for this country. It raises all kinds of questions as to obligations, duties, the allotment of risk and reward, the psychology of battle and the politics of power which are at best still only dimly seen. But one cannot read the service journals without sensing their presence in our affairs.





An LVT(A)(5) of the 747th rides a wave crest during its dash to the beaches.



Touching bottom, the tank moves out of the water to assume its role on land.



The amphibious tank mounts a 75mm and three .30s, and has a six-man crew.



*Amphibious Tanks* comprise the first wave in an amphibious assault on a hostile shore, providing direct fire on the landing beaches during the ship-to-shore movement, furnishing direct tank support ashore to assault infantry, and providing artillery support ashore to assault infantry until such time as the direct support artillery has been landed and can assume the mission.

## ARMOR'S AMPHIBIOUS MOBILITY

As the instrument of mobility in ground warfare today, the tank has been developed with all dimensions in mind. General ground use has been supplemented by special purpose evolution in the air transport and amphibious fields. The latter is represented in the picture story on these pages covering the activities of the 747th Amphibious Tank and Tractor Battalion. This battalion is a composite organization with a Headquarters, a Headquarters Company, a Service Company, two Amphibious Tank Companies and two Amphibious Tractor Companies. The 747th was activated as a tank battalion in Texas during World War II. It served in the ETO and was converted to an amphibious tank battalion in the latter part of the war. A reserve unit, it was recalled into active service from the State of Florida, and has been stationed on the West Coast, where it has trained a large number of officers and enlisted personnel in amphibious operations

U.S. Army Photos



*Amphibious Tractors* comprise the second and subsequent waves in an amphibious assault on a hostile shore, transporting and landing assault elements of the landing force, and providing landing vehicles to transport personnel, equipment and supplies from ship to shore during the selective unloading of the build-up phase of an amphibious operation. They are unarmored.



At Camp Cooke the 747th Tank and Tractor Battalion has ideal "terrain" handy.



A group of LVT(A)(5)s moving into the surf for a session of water maneuvers.



In a simulated water-borne assault, the amphibious tanks fire on shore targets.



# Task Force HAZEL to CH'UNCH'ON

by MAJOR JACK G. BROWN

**A**RMORED task forces have achieved impressive results in Korea in spite of mountainous terrain and narrow roads. An armored breakthrough followed by exploitation in the enemy rear can be particularly effective against Chinese Communist Forces because of their limited radio warning facilities and lack of mobile reserves.

Task Force Hazel to Ch'unch'on in May 1951 shows the flexibility with which armored reconnaissance units can be employed, and their ability to surprise, rout, and destroy hostile forces by roving deep in the enemy's rear. This operation demonstrates that every opportunity should be taken to use armor, regardless of the size of the unit, for even tank platoons are capable of meritorious service if communication and supply is maintained.

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The CCF launched the fifth phase of its offensive on the IX Corps front in Korea the night of 15-16 May 1951. Four days later this effort crumbled and IX Corps began a counteroffensive.

By 23 May, the key objective for IX Corps was the Ch'unch'on basin with its tactically important road net. Seizure of this objective would deny the enemy the use of primary roads north and east of Ch'unch'on, cutting off one of the CCF's most important escape routes north from X Corps on the right. A rapid advance in the IX Corps zone would prevent the CCF from reorganizing, and would hamper resupply and withdrawal of enemy units in the eastern portion of the Eighth Army front. In addition, it might cut off certain hostile groups and lead to their annihilation.

To pave the way for the division

attack, the Commanding General, IX Corps, directed the 7th Division to send an armored spearhead to Ch'unch'on via the Hongch'on-Ch'unch'on axis. U. S. Marine patrols had probed Ch'unch'on several days before and had encountered no resistance. So mines, and the possibility that the enemy would block the defiles, appeared to be the only danger to an armored force.

The 32nd Infantry Regiment was ordered by the division commander to organize a task force. The objective of the force was to locate enemy troop dispositions and harass and destroy them, reconnoiter for river crossing sites, and to assist if possible in the liberation of American prisoners of war. The 7th Reconnaissance Company was attached for the mission.

The CO of the 7th Recon Co was instructed the evening of 23 May to command the force—Task Force Hazel. In addition to his own company, he was given the 4th platoon of the tank company, 32d Infantry (six tanks, including a tank dozer), and a squad from Company B, 13th Engineer Combat Battalion, was attached for mine detection. Strength, disposition and tactical use of the force were left to the commander.

Task Force Hazel was ordered to cross friendly lines at Pusawon-ni simultaneously with a planned infantry jump-off 24 May at 0700. Because the 7th Recon encountered no opposition during a screening mission 23 May, the task force commander decided to take along his entire command. He figured that if resistance was light, he'd be able to get all elements to Ch'unch'on and would have a strong force at his objective. Since the artillery planned to give support as far as possible, the task force commander took along a forward observer from the 48th FA Battalion.

One-half hour and about three miles after crossing the line of departure, the column encountered a

ditch five feet wide and two and a half feet deep, dug half way across the road. The engineers checked for mines with sweepers and probing sticks, but found nothing. The tanks had no trouble crossing the ditch and jeeps and half tracks ran around it. One mile farther the unit encountered another ditch three feet deep and seven yards wide. The engineers checked this one for mines, and finding none, the lead tanks crossed and outposted the ditch. Then the tank dozer made a hasty fill and the rest of the vehicles moved forward.

As the lead elements reached Sinjom-ni, they were harassed by enemy small arms and machine gun fire. The noise of the tank motors and shooting made it difficult to judge the amount of hostile fire and the location of enemy troops, but possible enemy positions on the hills were sprayed by machine guns. The task force commander calculated that enemy fire was heavy enough to prevent the unarmored vehicles from continuing, and reported this to the CO of the 32d Infantry.

The main source of enemy fire was suspected as coming from Hill 545 even though four Corsair planes had raked the hill with napalm and machine gun fire 30 minutes before. After trying in vain to have artillery fire placed on this hill, the task force commander ordered the column to withdraw out of range of the hostile fire. The tanks covered the light vehicles and the force backed up several hundred yards.

The CO of the 32d Infantry ordered the task force commander to continue if he was receiving only small arms and automatic weapons fire, but not to over-extend his force or let it be completely cut off. So Task Force Hazel was revamped as a column of 11 tanks. Maneuver was difficult because the narrow road wound through rugged, mountainous terrain, and considerable time was re-

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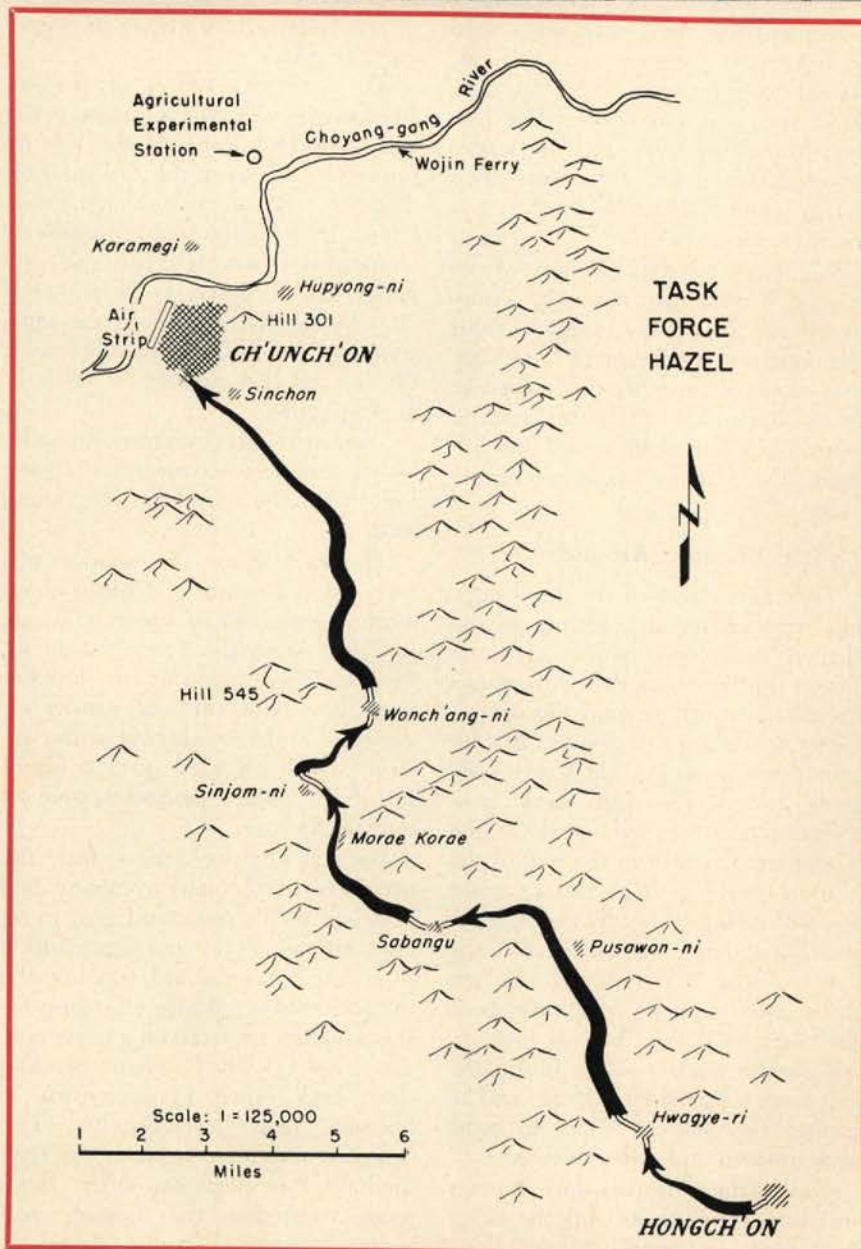


quired for reorganization. But at 1315 hours the depleted task force started toward Ch'unch'on. The unarmored elements of the 7th Recon, and the engineers, were left behind.

The tanks edged through Sinjom-ni under a hail of small arms and automatic weapons fire. Sharp turns and dust made driving difficult, though the surface of the road was good. Banks and shoulders tended to cave in when the tanks traveled too close to the edge of the five-meter road. Beyond the pass north of Wonchang-ni the tanks deployed in a valley and opened up with their weapons to feel out the enemy's fire power. It wasn't very impressive, so the column returned to the road and advanced rapidly into the Ch'unch'on basin.

When the task force reached the outskirts of Ch'unch'on at 1715 hours, the CO warned the tankers to be on the lookout for mines and enemy troops that might be on Hill 301. The tanks lumbered to the center of town. Their commanders were told to check the houses carefully. The leader of the 4th Platoon was ordered to take his tanks to the bridge north of town, block enemy escape, and reconnoiter the river for a crossing site. The task force commander took three tanks and covered the road junction in the northwestern part of town.

The pilot of a light plane overhead reported that 500 Chinese were running from Hill 301 to the east and north to Hupyong-ni. The 4th Platoon was ordered to move east along the river bed and mop up the enemy troops as they came toward it. The task force commander did not know the exact location of the platoon because of communication difficulties, but he figured that it had a 900-yard field of fire and could inflict heavy casualties on the Chinese. He also called the two-tank section he thought was at the school, and ordered it to move east then north to Hupyong-ni to drive the scattering enemy into the tanks of the 4th Platoon. But the two-tank section had become lost on the outskirts of Ch'unch'on. The radios in both tanks had failed suddenly, and when the commanders realized that they were alone with no other tanks in sight, they turned around and followed the other tank tracks into town. The task force commander later reflected that an additional 200





enemy troops could have been caught if these tanks had made the planned run.

Overhead the light plane pilot reported Chinese escaping on all trails leading out of the area. The task force had apparently surprised the CCF in Ch'unch'on, and the enemy's immediate reaction was to scramble madly out of town.

During this action, the six tanks of the 4th Platoon rumbled through town toward the river. Civilians came into the streets and seemed happy to see the tanks. They pointed out houses where Chinese were hiding and shouted "many, many." The platoon worked cautiously through Ch'unch'on, firing at houses that civilians indicated were sheltering Communist soldiers. One ran out of a house and was shot. Two who were washing their clothes at the riverbank started to run when they saw the tanks and were cut down. The platoon forded the river, and the leader reported that it was three feet deep at that point and suitable for jeep and truck crossing.

While two two-tank sections of the platoon turned east along the sandy river bank toward the bridge, a third section moved northwest to Karamegi. One tank discovered some gasoline drums and blew them up with a round of HE. It then turned and followed the platoon leader along the river.

### **Ranging Around**

Two tanks arrived at the bridge and reported seeing nothing, so the platoon leader told them to continue farther up the river. When the tanks arrived 650 yards beyond the bridge, the section leader saw 200 to 250 Chinese running single file some 1200 yards away. The lead tank fired several rounds of 76mm HE at the formation. Chinese in the rear of the column hit the ground, and a gunner reported seeing bodies fly through the air. These tanks then returned to the river crossing site and met the second section, and the four tanks traveled back to Ch'unch'on to look for the platoon leader. They found the task force commander instead, and he radioed the platoon leader to come back to town and join the force.

The platoon leader and another tank were trying to outflank the escaping Chinese by running north along

the road past the Agricultural Experimental Station then east to the Choyang-gang. Fifteen hundred Chinese were running off the hills 2000 yards across the river to the east. The tanks burned up their machine gun barrels firing at the fleeing enemy. One tank commander estimated that his 76mm gunner killed at least 200. The Communists did not return fire. They were throwing away their packs, canteens, and anything else that would lighten them for a faster getaway. After firing as much ammunition as could be spared the two tanks returned to the airstrip.

### **Light Aviation Helps Out**

About 1830 the light airplane pilot relayed a message to the task force commander.

"You might have to stay in town," said the pilot.

The executive officer of the 7th Recon, who was relaying messages to and from Task Force Hazel, was informed by the S3 of the 32d Infantry that the task force would remain in Ch'unch'on for the night. Reinforcements of one platoon of the tank company, 32d Infantry, to be followed later by another platoon of the same company, would soon be on their way. He relayed this message to the light airplane pilot.

"You will stay," radioed the pilot to the task force commander, reporting that reinforcements were being sent.

The task force commander was leery about keeping 11 tanks without infantry protection in a position where he didn't know the enemy's strength. Gasoline and ammunition supplies were low. But the commander ordered all tanks to assemble at the airstrip, which afforded good fields of fire, form a tight perimeter, and set out trip flares.

Back at the regimental area, the executive of the tank company had returned to his command post to secure rations, POL, and ammunition to be carried to the task force by the reinforcements. While arranging for the supplies, he received a radio message from G3, 7th Division, directing that Task Force Hazel return to friendly lines immediately. The company executive went to the regimental CP to check this order. Regiment confirmed the change, and these instructions were relayed to

the task force at its forward position.

It was 2025 when the task force commander received the division order to return to friendly lines. He checked to confirm it, and then asked the light plane pilot how much longer he could fly cover. The pilot replied "an hour." The commander asked him to stick around as long as possible on the return trip. Then he ordered the tanks to start rolling.

The tank column had traveled five miles without difficulty when the leader of the 4th Platoon radioed that one of his tanks was out of gasoline. The task force commander instructed him to tow the tank but if he could not tow it he was to destroy and abandon it. The platoon leader replied that he would tow the tank as long as he could.

At a small settlement in the valley north of Wonchang-ni the column received intense enemy small arms fire. The tankers buttoned up their hatches, and the plane overhead was called to look for the source of the hostile fire. After searching, the pilot replied that he could not see where the fire was coming from.

### **Night Column**

Through the night, made darker by dust and the absence of a moon, the column rolled on with large distances between the tanks. Before nightfall the tanks ran at 20 mph, but now they crawled along at 5 mph over the narrow, twisting road. Only the lead tank had its lights on, and the tank commander was instructed to go into blackout when the enemy fired. The leader of the 4th Platoon reported that he could not tow the tank that was out of gas any farther and was going to destroy it. The task force commander gave his approval.

As the tank column rounded a bend in the road south of Wonchang-ni, it was raked by enemy small arms fire from Hill 545. By this time the task force commander received orders from the 32d Infantry to halt in place and set up a perimeter for the night. On the left of the road loomed a cliff, and on the right the ground fell off into a gorge. The task force commander halted the column and told the regiment that he could not turn around, his tanks were receiving intense small arms fire, and were low on gasoline and ammunition. Regiment then ordered that the task force



establish a perimeter in an area about 2000 meters south of Ch'unch'on, which was about eight miles north of its present location. Apparently regiment did not know where Task Force Hazel was.

The commander informed regiment of the task force's location and predicament, and finally he was instructed to continue toward friendly lines until he found a suitable area for a perimeter for the night. The task force commander found an area north of Sinjom-ni in which he could assemble his tanks, but five minutes after establishing a perimeter he was ordered to move his tanks to the valley west of Sabangu and report personally to regimental headquarters.

### Resupply and Return

Gasoline and ammunition were waiting at Morae-Kogae. At 2300, while the tanks resupplied, the absence of the 4th Platoon leader was discovered. The task force commander reported to regimental headquarters near Pusawon-ni on 25 May at 0130. There he was ordered to take Task Force Hazel back to Ch'unch'on that morning, leaving friendly lines at 0600. Three platoons of the 32d Infantry Tank Company were attached for the operation. On its way back to Ch'unch'on, the task force found the missing tank wrecked in a gully north of Wonchang-ni. The platoon leader was dead; a tank in the rear of the column picked up the survivors.

The tanks arrived in Ch'unch'on without opposition at 0830. The task force commander outposted all sides of the town and awaited orders. His gunner destroyed several houses with 76mm shells when sniper fire was received from the direction of Hill 301, and the sniping stopped. A message said that the 3d Battalion, 17th Infantry Regiment, was en route to Ch'unch'on and the task force commander should meet the infantry south of the town.

A platoon leader brought in a Korean boy with a note requesting that the tanks rescue 19 American prisoners. The task force commander was skeptical. Near Sinchon, however, a light plane buzzed the tanks and dropped a message stating that Americans who had been prisoners of the Chinese had laid out a panel asking to be rescued. The pilot said that

he would lead tanks to these men. So three tanks were dispatched and the rescue was made.

The three platoons of the tank company were ordered to deploy in the northwestern part of town and the 7th Recon tanks were told to cover the area south of Ch'unch'on. One tank, proceeding to the southeastern part of town, struck a mine at the road junction. One man was killed. One platoon of the tank company en route to the Wonjin Ferry knocked out the four- or five-man crew of an anti-tank gun and five more Chinese in a nearby house.

Meanwhile, the first platoon set up a roadblock north of the river at the ferry. A light airplane dropped a note stating that 30 to 40 enemy were in trenches 500 yards to the north. The platoon advanced in line formation across the field shooting and running over Communist troops. On a ridge near the ferry the other platoon destroyed a 57mm recoilless rifle carried by four Chinese, and during the afternoon, fired on groups of one to eight Chinese trying to escape 800 to 1000 yards away.

Elements of the 17th Infantry arrived in Ch'unch'on in trucks between 1100 and noon without meeting any opposition. Numerous planes began to land on the Ch'unch'on airstrip, and traffic in town became heavy. Task Force Hazel was dissolved early in the afternoon.

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Although handicapped by inadequate means to block the escape of the entire enemy force, Task Force Hazel broke the back of enemy resistance in the Ch'unch'on area. The strength of the task force was insufficient for the job given it. A stronger armored force, supported by artillery and air, would have had the advantage of being self-sufficient after arriving in Ch'unch'on and would have been able to exploit more quickly the disorganized condition of the enemy.

The lack of overhead protection on the half tracks required the task force commander to leave his unarmored elements behind since they could not run the gauntlet of enemy small arms fire. A fully covered armored personnel carrier that can go anywhere that tanks can would have been useful. The experiences of Task Force Hazel demonstrate that deep penetrations by armor, where organized enemy

positions must be by-passed, require tanks, armored infantry, armored engineers, and armored artillery. If any of the components of the team are unarmored, then the whole operation is handicapped.

Since armor protection was not available for all elements of the command, a stronger force of tanks might have been used to better advantage. Two tank companies from the division along with the tank elements of the 7th Recon would have been able to fight a self-sufficient action after getting through to Ch'unch'on. In the meantime an infantry force and the remaining regimental tank company could have secured the passes and held open the route for motorized infantry to move in quickly to join the tanks in Ch'unch'on. If the task force had been reinforced in Ch'unch'on instead of withdrawn, the bag of enemy kills and prisoners would have been greater.

### Communications—Key to Control

Task Force Hazel was considerably helped by the observation and communication provided by the light airplane. It was hampered, however, by the lack of continuous communication both with higher headquarters and between elements of its own unit. Communication between an armored task force and the headquarters under which it operates should be direct and ample. The numerous relays of messages during this operation resulted in garbled orders and confusion. Though radio relay will serve in a pinch, special training is a prerequisite for making it work effectively. The failure of radios in some of the tanks contributed to the escape of many enemy troops.

The division reconnaissance force exists to feel out and develop the enemy situation. Its size and matériel should be adequate not only to accomplish the missions given it but also to exploit any opportunity to annihilate the enemy or hold an objective. The use of a reinforced armored reconnaissance company developed the enemy situation at Ch'unch'on, made the enemy's plight known to the division staff, and routed the Communist troops. But Task Force Hazel could have struck a crippling blow to the CCF if it had had the communication and strength to exploit immediately its initial success.



*Whether in combat in Korea, on the alert in Europe, or on tap in the States, the tank unit commander is looking for well-trained replacements to fill out his organization. Here is reassurance from a primary training source as seen by a junior officer who has had occasion to serve at both ends of the line.*

## Training the Tank Crew Replacement

by **FIRST LIEUTENANT ROBERT L. BURNS**

**I** NEVER learned a thing back in basic training!" Although this is a pretty broad and flat statement, it was the complaint voiced by many a new replacement arriving in a tank platoon in Korea. The individual soldier, faced with the prospect of actual combat, requires the support and confidence of high training. Many assumed that previous training had been inadequate preparation for the payoff assignment.

For example a man now finds himself occupying the position of bow gunner or loader—almost invariably replacements with little experience were assigned one or the other. The tank commander and the other crew members are now his instructors, and his training, though informal, is intense. He cleans cannon and machine guns and works on the tracks, under careful supervision.

Within a few days this "untrained" replacement is performing efficiently as a tank crewman, enjoying the confidence of the other crew members. He still insists that he has "learned more during one week in the platoon than during the whole period of basic!"

At this point, however, we must take exception with the man. It is

difficult to believe that such progress could have been attained if the man upon his arrival did not already possess a good background of military knowledge. What has been learned and forgotten can be easily relearned. Without constant refreshing and practice, military skills and knowledge are soon lost. The first few days in the platoon serve as a refresher. The successful performance of the replacement under combat conditions speaks well for the training program that has produced him.

### Room for Improvement

As with everything else, however, there was room for improvement in the training given to the trainees in the States. It was found that the average replacement was lacking a thorough knowledge in the following subjects:

1. COMMUNICATIONS  
operation and maintenance of radio equipment, radio procedure
2. CREW DUTIES & RESPONSIBILITIES  
especially maintenance of the suspension system
3. MACHINE GUNS  
assembly, disassembly and headspace adjustment of cal. .30 and cal. .50 weapons

It was thought that greater emphasis should be placed on these subjects in order to eliminate these deficiencies. A soldier cannot be a successful

tanker until he has mastered these skills.

The trainee in the Third Armored Division at Fort Knox undergoes 16 weeks of training. Upon completion of this period, the trainee is qualified to take his place in a tactical unit in Korea or anywhere else in the world. During his earlier weeks, he receives training in driving, maintenance, gunnery, communications, and various other necessary subjects. The training is conducted by committees. He spends his 13th and 14th weeks in bivouac, where he undergoes field problems under the direction of the "Tactics Committee." During this period, all of the skills that he has learned (and maybe has forgotten) are put into use. Many deficiencies of previous training are corrected at this stage. The men train as members of tank crews—each man must "produce" in the presence of the other crew members. The tactical problems include: Tank Platoon in the Attack, Tank Platoon in the Defense, Night Tank Attack, Tank Platoon in the Delaying Action and other platoon exercises. The purpose of this phase of training is not to give a detailed knowledge of platoon tactics as required for a platoon leader. The emphasis is placed, instead, on the part that the individual tank crewman plays in these operations. Problems are made very simple, as indeed most actual combat problems are simple—success or failure depending on the manner of execution.

The Tank Platoon in the Attack

**FIRST LIEUTENANT ROBERT L. BURNS** was commissioned upon graduation from the University of Massachusetts in 1950. He served as a platoon leader with the 70th Tank Battalion in Korea and is now a member of the Tactics Committee of the 3d Armored Division, Fort Knox, Kentucky.



problem will serve as an illustration. The eight-hour class is divided as follows:

#### I. INTRODUCTORY LECTURE (1 hour)

#### II. PREPARATION FOR THE ATTACK (Assembly area) (3 hours)

1. Before-operation maintenance
2. Check and stowage of OVM (On Vehicle Material)

#### III. CONDUCT OF THE ATTACK (3 hours)

1. Movement to the attack position
2. Final preparation and coordination at the attack position
3. Seizure and occupation of the objective
4. Reorganization on the objective
5. Critique

#### IV. MAINTENANCE (1 hour)

The various stages will now be explained in detail.

#### I. INTRODUCTORY LECTURE

A brief discussion of the characteristics of armor offensive action is followed by a detailed explanation of the duties of the individual tank crewman in the assembly area, in the attack position, and during the actual assault on the objective. Emphasis is placed on the fact that success of armor action depends on the performance of the individual crewman acting as part of a team. It is pointed out that the crewman has practically the same duties whether his platoon is attacking, defending, withdrawing, etc. The simple tactical situation is presented. The company is then broken down into platoons which are sent off to the tanks in the assembly area.

#### II. PREPARATION FOR THE ATTACK

Arriving at their tanks, the trainees are told that they are in the assembly area where they are to make the detailed preparations for the attack. Before-operation maintenance is performed; each man performs the duties of his crew position under the supervision of the assistant instructor. There is an instructor for each pla-

toon, and an assistant instructor for each tank. All OVM is removed and placed on the tarpaulin in front of the tank. Machine guns are cleaned and headspace is adjusted. Radio equipment is checked for completeness and operation. The assistant instructor questions the trainees on the uses of the various articles of OVM, and makes explanations and demonstrations whenever necessary. The OVM is then stowed in the proper manner—the necessity for proper stowage is explained. The fact that a large number of assistant instructors are available means smaller training groups and individual attention. In previous instruction in OVM stowage that the trainee has received, the classes were much larger. Radio communication is established between the tanks and the platoon is ready to move out.

#### III. CONDUCT OF THE ATTACK

The movement to the attack position, located nearby, takes only a few minutes. The purpose of the attack position, and the duties of the individual crewman at this stage are again explained by the assistant instructor. Final coordination and preparations are made. The instructor points out the line of departure and again reviews briefly how the actual attack is to be carried out. One section is assigned as the base of fire and takes up a defiladed position to cover the objective. The other section, the maneuvering force, crosses the line of departure and closes rapidly on the objective. The actual time consumed between the crossing of the line of departure and the overrunning of the objective is not more than ten minutes. When the objective has been secured, the platoon reorganizes and takes up defensive positions to repel enemy counterattack. A detailed critique is held immediately, covering the entire problem from the assembly area to the reorganization on the objective. The part that infantry would have played, if it had been available, is stressed.

#### IV. MAINTENANCE (1 hour)

After-operation maintenance is performed after every problem. Each man performs the duties of his crew position, under the guidance of the assistant instructor.

The other field problems are car-

ried out in the same manner. The exercises are made simple and actual movement is kept to a minimum in order to stress the duties and importance of the individual during the operation, especially during the preparation stages. Maintenance and stowage of OVM (including use of all articles of OVM) are covered in every problem. Crew drill, including evacuation of wounded crew members and dismounting to fight on foot is practiced often during the two weeks in the field.

This article has been written so that the platoon leader in Korea, or elsewhere, may get an idea of the training that replacements have received before their arrival in the tactical unit. Steps are constantly being taken to improve the quality of training that is given the 16-week cycle. Criticisms have been solicited from tactical tank battalion commanders, and their suggestions have been studied and acted upon.

Of course, there will always be room for improvements. There are those who would devote a greater period of training to field expedients—what to do when a tank throws a track on a hillside where another tank cannot approach it, etc. For a replacement arriving in Korea, where terrain is probably a greater factor in hindering the operation of our armor than enemy action, previous training of this sort would be invaluable. In that peninsula, mired vehicles, loss of tracks, etc., are everyday occurrences in the platoon that operates away from the roads.

#### Replacement to Veteran

The training of replacements has improved, and will continue to improve as time goes by. The replacements of the past, upon whom the rotation program in Korea has depended, have performed admirably. They are the veteran tankers of today. In the author's platoon, a private soldier replacement arriving in the platoon in April '51 became the platoon sergeant in July '51. Others who had arrived later were serving as tank commanders in a few months. Based upon the program now being carried out in the training division, the replacement arriving today in Korea or Europe will prove himself a well trained man of value to your platoon.



*A well-known political scientist continues his appraisal of*

*upset Europe in the germinating period of a second world war*

## AUSTRO-FRANKENSTEIN

by DR. ROGER SHAW

AUSTRIA was never quite the same after her twin civil wars of 1934. The socialists had been crushed and virtually extinguished, and the Nazis seemingly were down and out, save as troublesome groups of irresponsible gangsters. The church and the Schuschnigg "Fatherland Front," with its crutch-cross, ruled supreme, backed by a more or less efficient police organized on the historic "Metternich" model.

But although the Nazis had been driven underground after the death of Dollfuss, a Committee of Seven controlled their activities, and kept closely in touch with the Nazis of Germany. Captain Joseph Leopold was now the real leader of Austrian Nazidom, and with him on the Committee of Seven were Arthur Seyss-Inquart, Hugo Jury, Joseph Mannlicher, Oswald Menghin, and Leopold Tavs. Their headquarters were in Vienna, at No. 4 Theinfaltstrasse, and some of the members had considerable paradoxical influence in government circles.

The Committee did everything possible to promote illicit Nazi activities, and saw to it that the government bureaucracy, police, and university students were honeycombed with secret brownshirts. Leopold was in and out of hot water with the Schuschnigg regime, and the Committee hatched some rather extraordinary plots to bring about German intervention, and eventual annexa-



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tion. Heinrich Himmler, chief of the German secret police, a Bavarian "neo-pagan" with alleged Buchmanite sympathies, the Committee found especially sympathetic. Himmler, terror of the Nazi concentration camps, wore pince-nez and had a remarkably scholarly look. His agents knew the inner workings of the Austrian situation better than anyone else; better even than the Austrians themselves.

But although the German Nazis were strongly in favor of armed intervention in Austria, the Prussian army leaders were lukewarm to invasion. General Werner Fritsch, field-commander at Berlin, was conservative, not a Nazi, and feared a major European war. He considered Ger-

many unprepared for another 1914, cautious as he was, and he disliked the German meddling in Spain, which had begun in 1936. With Fritsch stood most of the Prussian generals, and these stiff-necked Junkers, whose ancestors had once defied the Hohenzollerns in the mark of Brandenburg, were still an influential group. In some cases, the Nazis feared them.

Fritsch held the opinion that Schuschnigg Austria was already coordinated with Germany in military matters, and indeed the Prussian and Austrian general staffs had an arrangement whereby Austria agreed never to fight Germany, and Germany undertook to respect Austrian independence in wartime. The annexation of the Austrians, said the Prussians, would lengthen the German frontier by some hundreds of miles, increase the problems of defense, and give Germany additional frontiers bounding Italy, Yugoslavia, and Hungary—when the Germans already faced France, Belgium, Holland, Denmark, Lithuania, Poland, Czechoslovakia, Luxemburg, and Switzerland. In case of a major conflict, said the Fritsch School of Thought, an Austria observing benevolent neutrality might prove more useful than an Austria annexed to Germany. These were weighty enough reasons, which the Nazi party completely disagreed with.

Things came to a head in Germany when the pro-Nazi Minister of



War, old General Werner Blomberg, married his young secretary, a lady of supposedly humble origins. Apparently this outraged the exclusive corps of Junker officers, monocles and all, but behind the scenes the point of friction was not the new Frau Blomberg, but the Austrian question. Fritsch and his school ranged themselves against Blomberg and the Nazis, backed by a Prussian army minority. Blomberg resigned, supposedly because of his marriage, and went off to the Isle of Capri on his honeymoon. He was genial, "human," a lover of fine opera, and an historical authority—a pleasanter person than the ramrod Fritsch. Hitler and Goering both had been witnesses at his "unfortunate" wedding. Then things began to move in Germany:

It was a bloodless "blood-purge." Fritsch and his followers were forced out of the Prussian army in considerable numbers, Goering was promoted to field-marshal, and General William Keitel took the places both of Fritsch and Blomberg. Hitler himself became War Minister, and old-style conservatives simultaneously were removed from the Foreign Office and diplomatic service. Goering and Himmler both were eager for the supreme Prussian army command, but they were overruled in favor of the diminutive, politically reliable Keitel. With the change of leadership, the attitude of the Prussian army toward Austria changed materially. Nor were Nordic theories allowed to stand in the way of army efficiency at a critical period, for the new German air-chief was General Erhard Milch, supposedly Jewish. And back of Milch stood another alleged Jew, Dr. Robert Ley, boss of the Nazi Labor Front.

Franz Papen, a former German Catholic Chancellor and millionaire man-about-town, was the ambassador to Austria. He had been expelled from Washington during the World War, at first was Vice-Chancellor under Hitler, but narrowly escaped the Nazi blood-purge which carried off so many "gentleman" monarchists on June 30, 1934. Papen really was safer in Austria than in Germany, where he was a potash king, and had been the especial favorite of the late President Hindenburg. Papen was a cross between a clown and a Metternich.

Papen suggested to Hitler that the recalcitrant Schuschnigg be invited to rustic Berchtesgaden, Hitler's mountain "Potsdam" in alpine Bavaria. Hitler agreed to this meeting, to iron out tangled Austro-German affairs, and Schuschnigg duly accepted and made the trip over the frontier. He left Vienna by automobile on February 11, 1934, with his Foreign Minister, Dr. Guido Schmidt. He brought along half a dozen Austrian detectives, but they were stopped at the German frontier, although previously Mussolini had taken 2,000 of them with him on a visit to Berlin. Instead of the detectives, elite Nazi police took charge of the anti-Nazi Schuschnigg. They were led by an Austrian deserter, as an added straw to break the camel's back.

### The Cause of Germanity

At Berchtesgaden, Hitler was none too polite to Schuschnigg, and told him that he was a traitor to the cause of "all" Germanity. It was perhaps true that Schuschnigg was more clerical than Germanic in feeling, but the Austrian dictator of Germany may have acted the part of a bully. The Prussian generals present also treated Schuschnigg to threats and disrespect *a la militaire*. Meals at Berchtesgaden became an ordeal to the badgered visitor.

Hitler demanded that Dr. Seyss-Inquart, of the Committee of Seven, be appointed Austrian Minister of Interior, in charge of the police. This would be a tactical deathblow to the dictatorial Schuschnigg regime; but when the Austrian Chancellor refused, Hitler threatened him with a Prussian army invasion. ("General Keitel, tell Dr. Schuschnigg about our troops assembled on the Austrian frontier," etc.) Unquestionably, a great deal of bartering went on at Berchtesgaden between Schuschnigg and the Hitler entourage, and Schuschnigg agreed to work for the "suicidal" appointment of Seyss-Inquart to the Austrian cabinet.

By February 15, Seyss-Inquart became Minister of Interior. The reluctant Schuschnigg attempted to undermine his hold on the police by reservations, and phoned Mussolini for help without avail. Italian troops were away in Spain or Ethiopia, and the Italic dictator needed German

help in his international projects. The shaky, jerrybuilt "Fatherland Front" was falling to pieces, and the Austro-Nazis were vastly encouraged by the elevation of a member of the Committee of Seven to so strategic a position. Rustic President Miklas of Austria found himself in violent opposition to Seyss-Inquart, heightening the tension to the snapping point.

The unaffiliated mobs in the chief cities of the country were turning into Nazis, and buying up cartloads of swastika badges. At Graz, in Nazi Styria, some 10,000 storm-troopers paraded openly in honor of a visit by Seyss-Inquart. Motorized Austrian regulars and aircraft had to be sent down late in February, to prevent the Styrians from marching triumphantly on Vienna and ousting Schuschnigg. There were similar disorders at Linz, in Upper Austria, and elsewhere in the provinces. Jews began to tremble, "Prussian" residents of Austria swelled with pride, and even in the Austrian army there were pro-German murmurs and anti-clerical mutterings.

Schuschnigg, in desperation, played his trump-card against Austro-German union: he decided to hold a Popular Referendum as the storm clouds gathered. Seyss-Inquart, as soon as he had been made Minister of Interior, had gone to Berlin to hobnob with the Nazi leaders there, and was virtually taking his orders from Herr Policemaster Himmler—certainly not from Doctors Schuschnigg and Miklas. The Austrian Chancellor feared that the Minister of Interior might *himself* hold an Austrian Nazi referendum, with Himmler's aid and German gold, and thought it best to forestall him at once. Schuschnigg even made overtures to the still "pink" Vienna workers, whom Dollfuss had crushed so mercilessly in February, 1934, and it was estimated that the Chancellor might win two-thirds of the people on his referendum if he manipulated it properly.

This Schuschnigg sought to do. His ballot cards only carried "Yes" (that is, *pro-Schuschnigg*) on them, and Nazi voters would have to supply their own "No" slips, which could not help but attract the attention of watchful anti-Nazi polling-place officials. This clever arrange-



ment promised anything except a secret vote, and it might well have scared off many of the Nazi voters, substantially reducing the total of the brownshirt opposition. Nearly 3 million Austrian men and women were eligible to participate in the Schuschnigg referendum under the eagle eye of Herr Guido Zernatto, secretary of the "Fatherland Front." What the Vienna workers would do, hating as they did both clericals and Nazis, nobody could tell. Many critics expected the ex-socialists to split.

The Austrian Nazis were enraged by the Schuschnigg voting arrangements, and decided to boycott the referendum. They were quite sure that they would lose it, as they were intended to. Hitler was brooding at his Berchtesgaden retreat, and his Viennese lieutenants were exceedingly flustered by Schuschnigg's quick move. There were Nazi riots at Graz, Linz, Innsbruck, and Salzburg, and the suddenly popular socialists bickered among themselves in Vienna. Their former burgomaster, Dr. Seitz, though himself ousted by the clericals in '34, was inclined to support them in '38 against the Nazis. The Jewish vote was solidly for the Catholic Schuschnigg. But much of the Catholic vote was for the "neopagan" Hitler.

Then, Berlin delivered an ultimatum. The Schuschnigg referendum would have to be called off. This was at noon on March 11. The Austrian Chancellor again appealed to Mussolini, and as before it was in vain. The modern Machiavelli had other things to think about, and said so. Schuschnigg was worn out by stress and strain, continuing *Sturm und Drang*, and gave in. On March 11, at seven-fifty P.M., he announced his resignation over the radio, adding dramatically: "*God help Austria.*"

He told his Austrian listeners that he was handing over the government to that horn-rimmed lawyer, Dr. Arthur Seyss-Inquart; that the Prussian army was coming into Austria as a force of occupation; and that the Austrian General Schilhavsky had orders to fall back peacefully before the invaders, to avoid any "inter-Germanic" bloodshed. In a sense, it was a very gallant speech by a brave man!

That same day the "crack" Nazi storm-troop of Vienna, Standard

Ninety-Nine, occupied the Austrian Chancellery—that building which Nazi Standard Eighty-Nine had seized, murdering Dollfuss, four years before. This time the Nazis were there to stay.

Wealthy Jews and the leaders of the now extinct "Fatherland Front" began to flee in all directions. Some 2,000 Schuschnigg men were jailed. The Vienna Nazis and mobsmen rioted in an orgy of anti-Semitism. At Schoenbrunn, with its 1,500 rooms, erstwhile summer palace of the Imperial Family, the Hapsburg tradition was definitely a thing of the past. Dr. Schuschnigg was placed under detention, consumed with love (they said) for the divorced Countess Vera Fugger Babenhause, born a high and mighty Czernin, beautiful blonde, 34, and a former insurance agent. Romance was sprouting even under the heel of the Prussian boot. But the ex-Chancellor's 11-year-old son achieved the adventurous position of a political hostage, clad in a fancy sailor-suit.

#### The Final Effort

One of Schuschnigg's ministers, his propaganda expert, washed dishes in a prison. Vienna Burgomaster Schmitz, unpopular as ever, was charged with treason to Hitler. Hans Schneider, a dark Jew who was the world's most popular ski-instructor up in Vorarlberg, a really splendid outdoor man, was jailed at the instigation of a rival Nazi ski-teacher. Baron Louis Rothschild, hated since the Credit Anstalt Banking collapse of 1931, was held for trial. Jewish Bruno Walter, driven from Germany by the Nazis in 1933, lost his position as director of the Vienna Opera. A famous ear-surgeon, Dr. Heinrich Neumann, was taken into custody, despite the "heated protests" of one of his best patients, the Duke of Windsor. The liberal Austrian freemasons found themselves "attended to" because of their "international" affiliations and "Hebrew" lore. Dr. Sigmund Freud, afterward to leave Austria, was too sick at the time to be seriously molested. Five Vienna newspapers, and the immense Jewish Zwieback department-store, were confiscated.

Vienna saw many suicides, and half a dozen leading doctors poisoned themselves with their own prescrip-

tions. One was a Nobel Prize winner, it was rumored. "Hop the twig, Judah!" roared the lynch-minded Vienna proletariat as they rough-housed with frightened Jews in the Leopoldstadt ghetto section. Babies born in the city hospitals were being named *Adolf*. The neglected grave of Otto Planetta, the man who in '34 shot Dollfuss, was profusely decorated. Hapsburg archdukes they jailed, and the extensive Hapsburg properties were confiscated, for good and all. The Viennese medical authorities declared: "Only Nordic corpses may be used in dissecting." Only *one man* abashed the rampant Austro-Nazis—a veteran Austrian Jewish general, in full and honorable regalia. In short, it was a Revolution.

Seyss-Inquart came originally from Bohemia, and had gone to school with the lonely Schuschnigg whom he was supplanting. Although an avowed admirer of Hitler, the incoming Austrian Chancellor was still on good terms with the outgoing one. Seyss-Inquart was shortsighted, blond and sandy, and a devout Catholic although a Nazi. Youngish-looking, he was little known, and had a limp. His brother was the confessing-priest to the former Empress Zita, hardly a friend of Seyss-Inquart in politics.

The new "dopey-dupey" Nazi Chancellor of Austria promptly formed a cabinet, following the retiring radio words of Schuschnigg: "We have yielded only to brute force." He included in the new ministry Dr. Franz Huber, Goering's Austrian brother-in-law, and gave him the title of Minister of Justice. Meanwhile, the Prussian widow of the murdered Chancellor Dollfuss was barely escaping across the line into Hungary.

No sooner had Seyss-Inquart formed his Austro-Nazi ministry than he wired to Hitler at Berlin: "I appeal to the German government for the earliest possible dispatch of troops, to assist in the prevention of bloodshed." This was the starting signal. The reorganized Prussian army, held in readiness on the Austrian frontier, began its epic march on Vienna.

On March 12 it streamed in at half a dozen points: Scharnitz, Passau, Kufstein, Salzburg, and elsewhere. It came motorized and mechanized, by trucks, police cars, motorcycles and light and heavy tanks, touring-



cars, armored cars, and swift cross-country six-wheelers. It came also by air, from the nearby Bavarian flying-bases. No time had been lost: Schuschnigg resigned at suppertime. The Seyss-Inquart cabinet had been formed by midnight. The Prussian army invaded Austria before breakfast. The fieldgray troops first crossed the boundary at five-forty A.M.

Perhaps 300,000 German troops, all told, entered Austria. Many of them were 35-year-old reservists, others were Elite police and storm-troop formations. Three-hundred bombing-planes landed 3,000 troops at the Vienna airport in a sensational flying feat. The new four-lane Bavarian auto-parkways proved themselves a great asset in the Wehrmacht mobilization, and 65,000 Germans entered Austria the first day, covered by pursuit planes, and encumbered by lines of motor vehicles miles long. There was a great deal of tactical and mechanical trouble with the tanks, in transit! They were supposed to proceed to Vienna under their own power in orderly columns, but they kept stalling and breaking down, and the narrow Austrian roads were seriously clogged. The high command became alarmed by such patent inefficiency, and Hitler himself was disgusted. Synthetic oil and rubber did not add to the peace of mind of the Prussian tankmasters.

The *Schuetzengrabenvernichtungsautomobil*, or tank, was something new to the Prussian General Staff. It had employed very few of them in the First World War—perhaps fifty to an Allied 5,000—and tanks had been forbidden to Germany by the Versailles Treaty. When the Nazi rearmament boom took place, the postwar tanks had been built in a hurry, on improvised plans, and with inferior material. There were very few, if any, tank experts in the Prussian army, and German tanks sent to the Spanish civil war failed to perform very well. This weakness in mechanization showed itself even more disastrously in the march on Vienna. Finally, to alleviate the chaos on the Austrian roads, railway flatcars were run up, the tanks were loaded aboard, and the German advance continued more easily.

Hitler followed the army in a big six-wheel Mercedes-Benz: now in

America. He stopped at Linz, capital of his native Upper Austria, and received a tumultuous reception. He made a speech from the City Hall, and called his trip to Vienna a "divine mission I have fulfilled." Braunau, his birthplace, Hitler visited for the first time in a quarter of a century. His eyes filled with tears. Meanwhile, Himmler and six carloads of his fierce German police stationed themselves in the Austrian Chancellery, along with Nazi "Standard" Ninety-Nine. These German police soon began to relieve the Austrian police of many of their duties. The Austrian police were relieved of their hard-rubber clubs, which they had used so often to beat Vienna's Nazis.

### Triumphant Entry

On March 14, at five in the afternoon, Hitler entered Vienna at the head of a thirty-five-car motorcade. That day he had toured leisurely over from Linz, a hundred miles, and he was uproariously received by half a million Viennese, as bells pealed and the burghers went wild with contagious enthusiasm. He proceeded to the Imperial Hotel, and from a balcony declared to the multitude:

"An oath was sworn today by Germans from Cologne to Koenigsberg, from the Rhine to far East Prussia, from Hamburg to Vienna . . . Some 74 million people in one united Empire swear that no menace, no force, no necessity can ever break it up. This is my oath!"

Next day the Prussian army put on a monster military demonstration in Vienna, after Hitler had breakfasted on chocolate, prunes, and a roll. Some 25,000 German troops goosestepped down the Heroes Square, while hundreds of their airplanes droned above the vivid scene. Big guns and tanks paraded, and the gala-garbed Austro-Nazis were there in full force. Cried Nazi No. 1: "I declare to history the entrance of my native land into the German Empire." Meanwhile, incidents of friction were reported between high Austrian staff-officers, ever courteous, and the traditionally rough German military police. Nevertheless, General Keitel (small as ever) and the studious Himmler stood with four "polite" Austrian generals on a low, improvised reviewing-stand to salute

the parade. Keitel kept on his steel-helmet. Four hours later, happy Hitler returned to Berlin.

Seyss-Inquart, who had been Austrian Chancellor for three days, now became a mere Austrian governor, or viceroy, like General Epp in Bavaria and the other Nazi district leaders. Joseph Buerckel, hard-looking, highly efficient Nazi boss of the Rhenish Saar area, was imported to supervise Dr. Seyss, and Buerckel made a special effort to win over the ex-socialist workers of Vienna. He gave 25,000 of them free seven-day vacations in Germany and said to them: "I do not demand that you declare yourselves Nazis at once, but when you get back to Austria I want you to look me straight in the eye and say: 'I have tried to understand.'"

Meanwhile, the Austrian Fifteenth Infantry visited Berlin, and *Deutschmeister Regiment Nummer Vier* had a good look at Munich. The *Deutschmeister* received German uniforms, and Germany's navy took over Austria's single Danube gunboat, of *Monitor* design. In Vienna, the Prussian army field-kitchens handed out free meals to the municipal unemployed, and the mark supplanted the schilling. In many cases the "virtuous" German invaders defended Austrian Jews from Austrian Nazis.

Some 2 million Berliners—more than equal in numbers to the total population of Vienna, now the "second city" of the Empire—welcomed Hitler on his return. They stretched solidly from the Tempelhof airport to the German Chancellery. They cheered and waved flags, and they kept perfect Prussian order. They were in a good mood. At last they had beaten Austria, led by an Austrian. It had taken them a little less than two and a half centuries.

\* \* \* \* \*

For some eighteen years, Austria's ambassador to England had been a pompous, stiff-necked aristocrat, "more British, you know, really, than Viennese." This Herr Baron renounced now his race, became a Windsor subject, and was duly knighted. Above all things, he hated the gulping maw of the Prussian Monster, it seemed. And his actual name, by curious fatalistic coincidence, was *Frankenstein—Austro-Frankenstein*.



## NEWS NOTES

### Tankers Solve a Problem

WITH THE 3D INFANTRY DIV. IN KOREA—When a 65th (Puerto Rican) Infantry Regiment tank section was ordered to support Greek troops recently in Korea, a problem arose.

The problem was that of communication. None of the Puerto Rican tankers could speak Greek and the Greeks could speak neither English or Spanish. The orders, however, called for immediate coordinated action.

Then, a quick thinking American lieutenant came up with an answer to the problem. Remembering how easily one of the Korean boys with his unit had learned English, he sent the boy over to find out if any Koreans with the Greek unit had learned to speak Greek. One was found.

Thus, the orders were given in English to the Korean boy, who in turn gave them in Korean to the other boy. The second Korean boy then translated the orders into Greek.

The operation was a complete success.

### Alco to Produce T48 Tank

American Locomotive Company has announced the receipt of an order amounting to approximately 200 million dollars for T48 tanks and spare parts, and said that this newest Army medium tank would be coming off assembly lines at its Schenectady tank

plant in the first half of 1953.

Duncan W. Fraser, chairman and president of American Locomotive, said that the new order raised the company's total backlog of defense work to approximately 950 million dollars. Alco already has substantial orders for the Army's M47 tank, which it is turning out at volume production.

### New Jersey National Guard Given M47 Tank Demonstration

Members of the 50th Armored Division of the New Jersey National Guard, in summer field training at Camp Drum, New York, witnessed demonstrations of the M47 improved Patton tank.

The demonstrations are in line with Army policy of keeping units of the Reserve components informed of the latest developments and advances in military equipment and techniques.

An experienced team from the 44th Medium Tank Battalion of the 82nd Airborne Division at Fort Bragg, North Carolina, manned five tanks sent to the training site from the American Locomotive Company at Schenectady, New York. The team remained with the National Guard unit during its stay at Camp Drum.

The 50th Armored Division, under command of Major General Donald W. McGowan, had its field training from June 28 to July 12.

### School at Fort Knox Named After War Hero

A school building at Fort Knox, Ky., has been named after a Washington soldier who was killed crossing the Rhine River in World War II.

Corporal Townsend Woodhill Crittenberger, son of Lt. Gen. and Mrs. Willis Crittenberger, formerly of Washington, was memorialized in the dedication ceremonies at the school for dependents of military personnel. Senator Henry Cabot Lodge, of Massachusetts, delivered the eulogy.

Gen. Crittenberger's son, a tank gunner, was killed shortly after his tank crossed the Rhine River in the Remagen bridgehead area in March, 1945. He was posthumously awarded the Bronze Star and the Purple Heart Medals. He is buried in Arlington Cemetery.

### New Tank Manufacturing Facilities

The Army Ordnance Corps has acquired manufacturing facilities at Pittsburg, Cal., which, Ordnance spokesmen say, will be used to make large tank castings. Prior to its transfer to the Ordnance Corps the plant was in the custody of the General Services Administration. It is to be operated by the Columbia-Geneva Steel Division of the United States Steel Company.

Rehabilitation and conversion of the facility is expected to cost approximately \$9,500,000 and require several months for completion.

### Britain to Send Swiss Two Tanks For Trial

The British government is sending two British Centurion tanks to the Swiss army for a three-month trial, the Swiss Defense Department announces.

The department is seeking to purchase several hundred tanks and the two Centurions are to be tested for their suitability in Swiss conditions. A Swiss military mission is in the United States to test American tanks which might be available for sale.

### Armor Association Supported by Armored Division Associations

The U. S. Armor Association has received strong support from a number of Armored Associations. These organizations, which have been meeting in annual convention in various cities around the country during the summer months, have notified the Armor Association of a gratifying action taken in its behalf.

The 1st Armored Division Association meeting in Pittsburgh; the 6th Armored Division Association meeting in Washington, D. C.; the 10th Armored Division Association meeting in New York City; and the 11th Armored Division Association meeting in Washington, D. C.; these organizations have passed resolutions expressing their support of the Armor Association and its



Not quite a baseball team, but a top tank crew are the Perricone quadruplets of Texas. Mrs. Perricone is proud of her Armor team. Left to right are Bernard, Carl, Donald and Anthony. They are in Korea with 73d Tank Battalion.

U.S. Army



publication ARMOR, and stressing the value of an organization devoted to mobile warfare.

Many veterans of Armor from the World War II days have continued their interest in their former branch through membership in the Armor Association. They are regular subscribers to ARMOR.

### Armor Association Will Move Into New Quarters In October

With the September-October issue of ARMOR off the press and on its way to member-subscribers around the world, the headquarters of the Association and the editorial office will move to other quarters.

The move is necessitated by a chronic Washington disease—"parkinglotitis."



U.S. Army

So many people have cars these days that city landowners can pull down more profit out of a vacant lot than they can with a building, especially a building as old as the one which has housed the Association over the past twenty years or so.

The details of the move were in the planning stage as ARMOR went to press. More word will be forthcoming in the November-December issue. It is probable that the move will be to an adjoining building, thus limiting the change of address to only several digits.

Brig. Gen. Arthur G. Trudeau has assumed command of 1st Cavalry Division in Japan, replacing Maj. Gen. Thomas L. Harrold, who has taken over the Japan Logistical Command.

## AN OLYMPIC EQUESTRIAN REPORT

### PRIX DES NATIONS

(August 3, 1952)

In this tremendous test the U. S. Team led the field over the morning rounds in the Olympic Stadium. In the afternoon rounds our great 19 year old veteran "DEMOCRAT" faulted just enough to drop our Team to third with results as follows:

1. Great Britain	40.25 faults	8. Portugal	65.0 faults
2. Chile	45.75 faults	9. Mexico	65.75 faults
3. United States	52.25 faults	10. Spain	67.25 faults
4. Brazil	56.5 faults	11. Sweden	80 faults
5. France	59 faults	12. Egypt	80.25 faults
6. Germany	60 faults	13. Romania	180.25 faults
7. Argentine	60.75 faults	14. Russia	198 faults

(Italy and Finland Teams eliminated)

### OUR INDIVIDUAL SCORES

PLACE	RIDER	HORSE	FAULTS
11	William Steinkraus	Hollandia	13.25
13	Arthur McCashin	Miss Budweiser	16
14	John Russell	Democrat	23

### THREE DAY EVENT

(July 30-August 2)

Here was the supreme test with our young riders competing against the field of 59 of the world's best. Of this number 25 were eliminated.

### OUR INDIVIDUAL SCORES

Training Phase—Endurance Phase—Jumping Phase

PLACE	RIDER	HORSE	PENALTY FAULTS
9	Charles Hough	Craigwood Park	70.66
18	Walter Staley	Cassivellannus	168.5
31	John E. B. Wofford	Benny Grimes	348

Our Team finished third with the Teams of Sweden and Germany in front and Portugal, Denmark and Ireland behind. The combined ages of our horses and riders was 80 years.

TEAMS ELIMINATED: Italy, Finland, France, Argentina, Switzerland, Great Britain, Holland, Russia, Chile, Romania, Bulgaria, Canada, Spain.

### INDIVIDUAL DRESSAGE

(July 28-29)

Here was an invasion of the hallowed field of a strictly European art. Our three riders performed well and with distinction and were placed as follows:

### OUR INDIVIDUAL SCORES

PLACE	RIDER	HORSE	CREDITS
11	Robert Borg	Bill Biddle	498
17	Marjorie Haines	The Flying Dutchman	446
27	Hartmann Pauley	Reno Overdo	315

### TEAM SCORES

1, Sweden, 1,592.5 points; 2, Switzerland, 1,575; 3, Germany, 1,501; 4, France, 1,423; 5, Chile, 1,340.5; 6, United States, 1,259.5; 7, Russia, 1,210; 8, Portugal, 1,198.5.



*Maneuvers—and a story of how the Army saved money . . . and civilian good will*

## COWBOYS IN KHAKI

by **FIRST LIEUTENANT WILLIAM J. BREISKY**

**D**URING the most feverish moments of Exercise Long Horn, when the 1st Armored Division of the United States force had punched a breakthrough past the line held by the friendly 31st Infantry, those at the reins had their hands full keeping their units moving at a constant speed.

Major General Bruce C. Clarke's "Old Ironsides" division was a galloping, mile-wide steamroller, forcing the hapless Aggressor to up-end and scatter like a stepped-on tube of shaving cream. Judicious umpires were calling the balls and strikes, and innning by innning they made detailed pencil notes on the errors.

It was in this period particularly, often within range of the simulated artillery fire, that small bands of men labored at projects that were to make this "war game" slightly less realistic, grossly less expensive.

In teams of five, soldiers of the 1st Armored were shooing cattle and hammering fences. Property damage in the barren central Texas area was being made right even before the landowner knew his land had been molested.

A lesson of the 1941 Louisiana maneuvers had been learned well. Of that operation, a magazine writer\* once noted, "There wasn't time to be polite . . . There wasn't time to consider property losses. There wasn't even time to train an armored divi-

sion, because Hitler had taken France, and his armies were on the channel."

Now there was time—time to protect the taxpayer and his government. This time, property rights would be respected. And Uncle would not be called upon to pay the price of a black Angus when one of his medium tanks trampled a fleeing field mouse.

Operation Fence came into being as a project of the division G-4 and the division damage control officer. The responsibility for fence repair training fell to Lt. Col. Ralph N. Hale's 16th Armored Engineer Battalion.

Twenty-eight "fence units" from the division's major commands, tank battalions, armored infantry battalions, artillery battalions, reconnaissance battalion and G-4 section attended the fence repair classes given by the 16th a week before the "Go" sign was signaled for Long Horn. Forty engineer squads were trained to act as reserve teams.

Lessons in the eight-hour course were simple and practical: setting and re-setting wooden posts; tightening and stapling wire; construction of the farmer's gate and swing gate; building of H-type and knee-type end posts. At the completion of the course, each fence unit was issued a set of tools along with a supply of nails, posts and wire.

When the maneuver got under way, fence teams were riding at their unit's elbows, ready to cut a fence, then stay with it and repair it. The mission of the teams was to repair any gate or fence, destroyed or damaged, within eight hours after the damage occurred.

Sometimes these OD ranch hands

found themselves playing sentry to discourage a herd of grazing roasts of beef from making for a hole in a fence. When fence units were not available to make a break in a fence, units left guards at the trampled section to stand by until a repair team arrived.

Army-caused damage was never left unguarded—with one exception. The 82nd Airborne's Aggressor force didn't grant tactical immunity to the good will hammer-and-nail men; so "Vamoose" became the felicitous order of the moment whenever a row of green helmets appeared on the horizon.

Once a fence unit took over a break, it was responsible for guarding it until repaired. In the event that a break in a fence was to be re-used many times, a gate was constructed and a guard posted.

The fence unit consisted of a driver, an NCO or private first class and three privates. These men carried their tools with them on a 2½-ton truck. They were supplied by their units with "C" or 10-in-1 rations as needed. In addition to their set of tools and basic load of fence repair material, the teams were re-supplied from the division engineer supply officer's stock of expendable repair material items.

Teams were given no additional duties during the maneuver period, but remained "on call" at all hours.

"Fence team forward" was a familiar call during the maneuver when a tank battalion was forced to by-pass a bridge of insufficient capacity or a pipe cattle guard . . . when an infantry unit had to breach a fence to reach its assembly area . . . when a combat command was spanning a wide, fenced-in range area in

\*Roger P. Flaherty in the April 6, 1946, *Saturday Evening Post* article, "First of the Many."

LIEUTENANT WILLIAM J. BREISKY is a member of Company C, 16th Armored Engineer Battalion, 1st Armored Division, Fort Hood, Texas.



carrying out an offensive operation.

Sometimes the small teams ran into an area with more breaks than standing fence. Reserve teams from the 16th trotted to the scene at those times and an immediate report was made to the division damage control officer over G-4 channels from major command headquarters.

In these areas of extensive damage or where time permitted only temporary restoration, breaks were checked and repaired further if necessary by division or a Long Horn agency.

The spring's heavy rains had teamed up with the Army's heavy armor to result in a lot of chewed-up road and pasture land. Without a foresighted damage control program, the actual claims total would have climbed much higher.

In an effort to hold down complaints, a full-scale restoration program got under way literally as soon as the last Long Horn shot was fired.

The fence teams, reinforced with more men and more supplies, returned to the maneuver area with a simple mission: to make good all Army-caused property damage. Nearly all complaints were rapidly serviced by fence teams that had been well-trained and were now well-practiced in their art.

The 46th and 61st Engineer Construction Battalions participated in the post-maneuver work. But the wind-up fell to the 16th.

In late summer, General Clarke wrote through the new battalion commander, Lt. Col. William L. Starnes, Jr., a letter of appreciation to 1st Lt. Thomas R. Cox, "A" Company Commander, for "the splendid work in completing the rehabilitation of the maneuver area." He added: "I've heard nothing but good reports and many expressions of satisfaction from the civilians whose property was damaged."

The small group of soldiers who had played roles in the sub-maneuver, "Operation Fence," knew that their work had had something to do with the successful close of Exercise Long Horn and with the good neighbor feeling born of attention to property rights.

Most of these war game cowboys, however, welcomed a change in pace. "Don't Fence Me In" was to be their marching song . . . at least until the next maneuver.



A typical "fence unit" and its equipment as used during Exercise Long Horn.



The engineer battalion gave a practical course in fencing, in old ranch style.



Special tank tracks across county roads did much to further public relations.



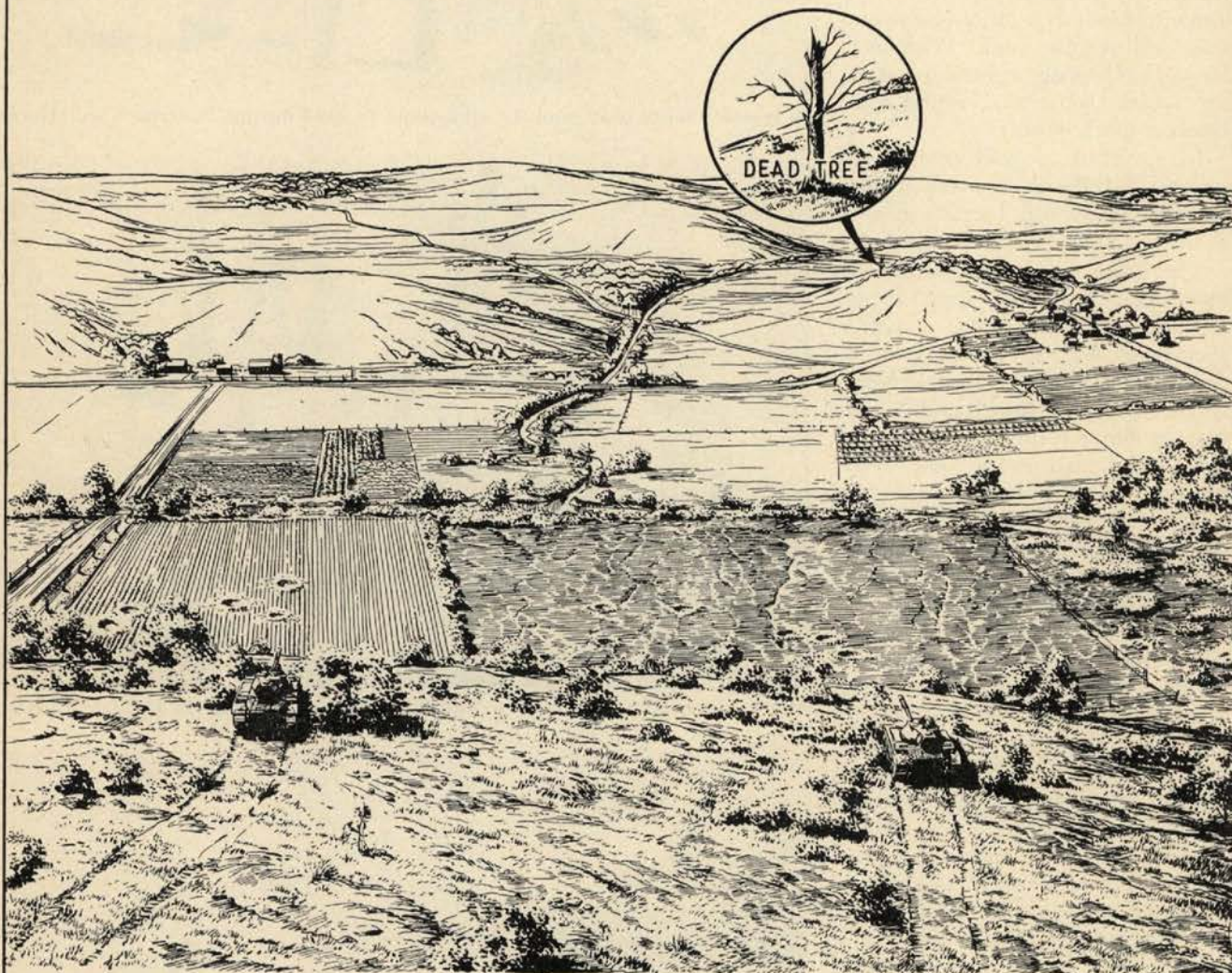
# HOW WOULD YOU DO IT?

AN ARMORED SCHOOL PRESENTATION

AUTHOR: MAJ R M RIGGSBY

ARTIST: M SGT W M CONN

**GENERAL.** An important mission of armored units organic to the infantry division is reinforcing the fires of the infantry. Tanks must be prepared to render these reinforcing fires during the hours of darkness as well as daylight. This presents a problem to the tanks, but by using the auxiliary fire control equipment, accurate and effective fire may be placed on targets and likely avenues of approach at night.

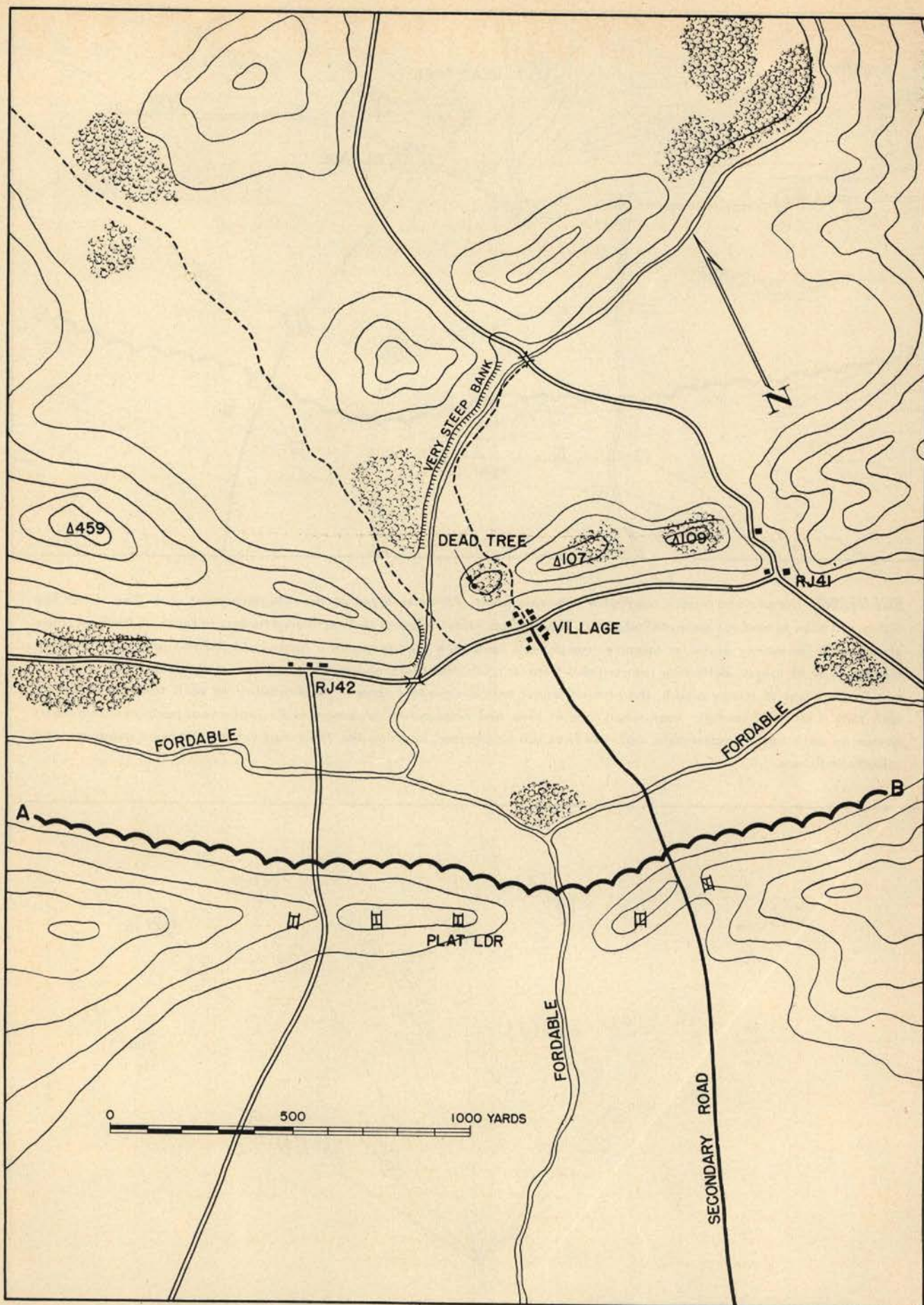


**SITUATION.** You are platoon leader of 1st Platoon, Tank Company, 1st Infantry. You have been attached to the 2d Battalion for an offensive operation. During the first day of the attack, the 2d Battalion secured its objective and is now preparing night defensive positions along the line A-B. The battalion commander tells you that your platoon will remain under battalion control. He also informs you that your platoon must be prepared to fire and reinforce fires on likely avenues of enemy approach throughout the night from your present position. (See sketch.)

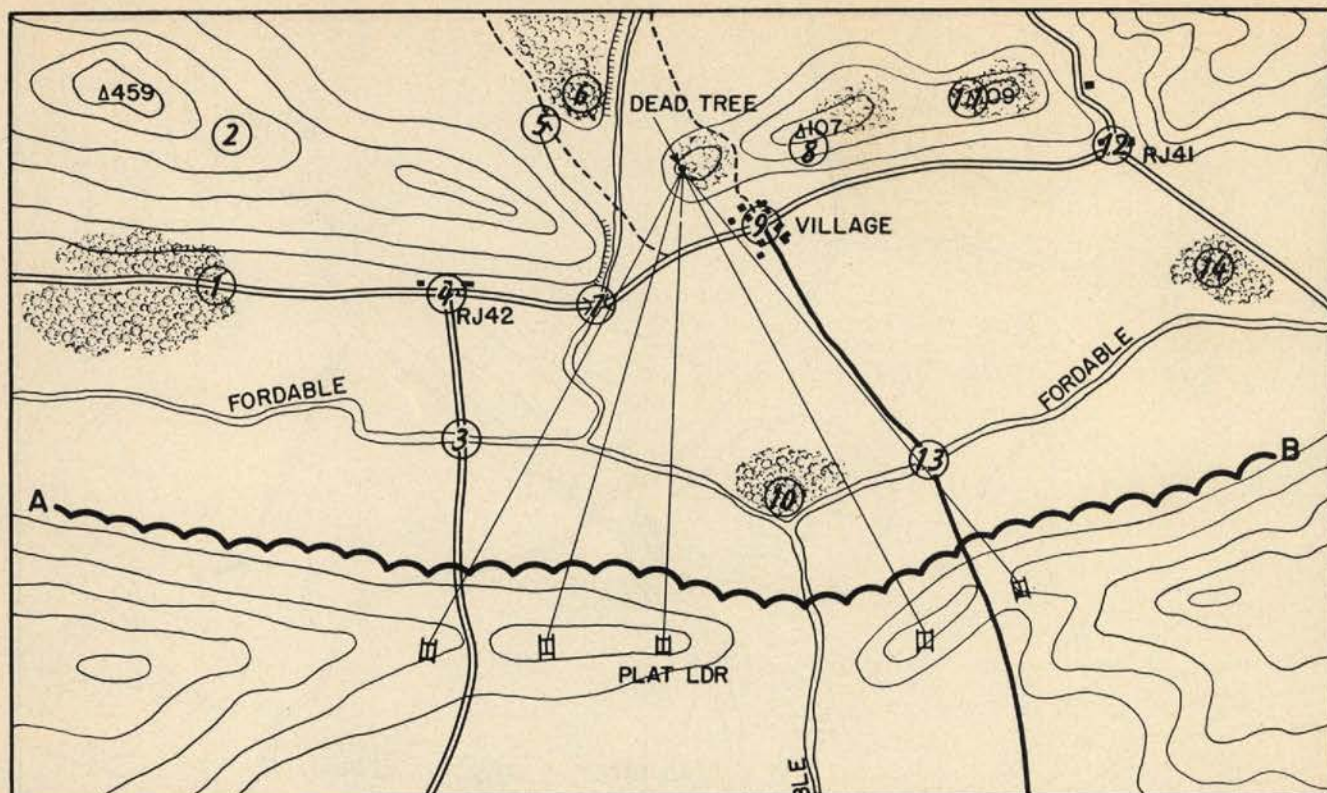
1. What specific targets would you designate?
2. What method would you use to prepare necessary data to place fire upon these targets?

**NOTE:** Your platoon is equipped with the 90-mm Gun Tank, M47.

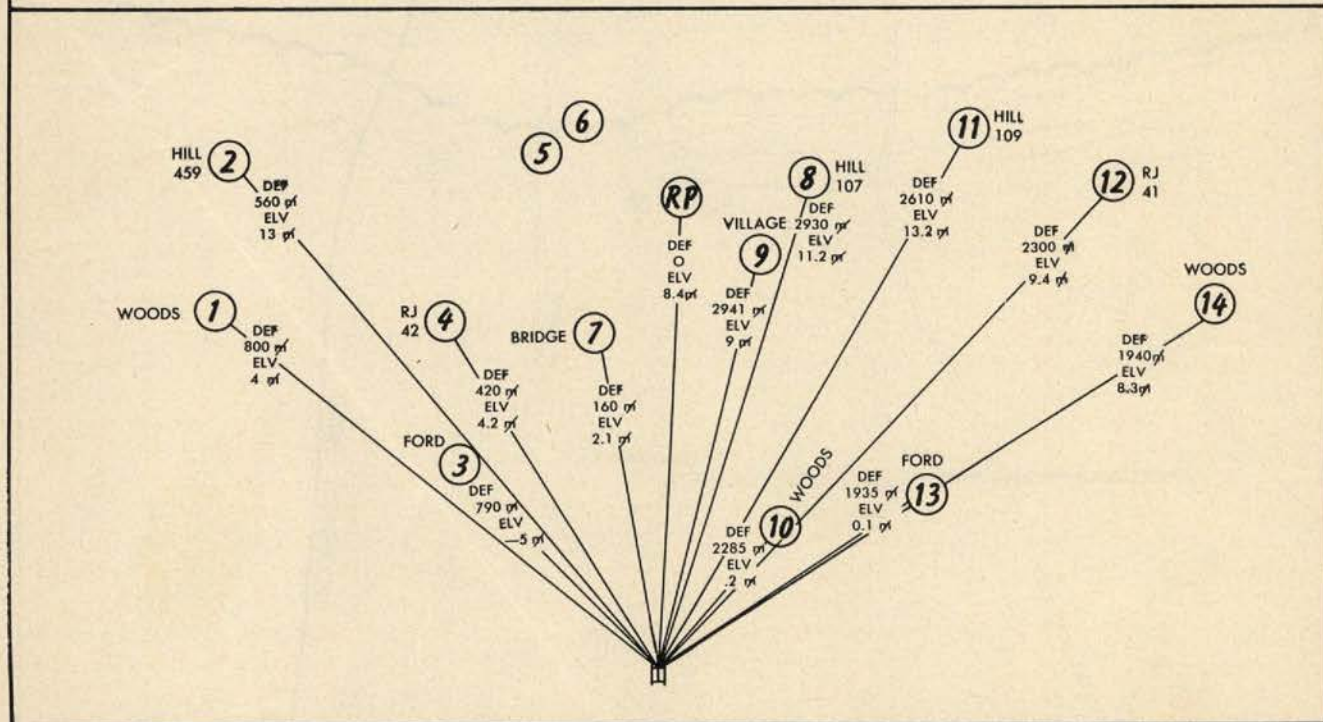








**SOLUTION.** The platoon leader selected a reference point. All tanks layed on the reference point with their direct fire sights and then zeroed the azimuth indicator. The platoon leader selected and numbered targets to cover all likely avenues of approach for enemy armor or infantry (see above). Each tank then prepared a range card (below) showing the target number, type of target, deflection (as recorded from azimuth indicator), and quadrant elevation necessary to hit each target. In the event of enemy attack, the platoon leader may designate a zone of responsibility to each tank by assigning each tank a block of targets. Even when lack of time and ammunition or danger of disclosing your position makes registration on each target undesirable, accurate fires can be planned by using the T41 range finder, elevation quadrant, and azimuth indicator.





*Discipline is the sine qua non of military life. Its existence depends upon a number of things such as leadership, personality, morale, training. One of the more tangible tools in the picture is military justice. The application of corrective measures at the small unit level is an important "stitch in time" phase*

## Non-Judicial Punishment for Minor Offenses

by COLONEL DEAN E. RYMAN

**T**AKE us the foxes, the little foxes that spoil the vines," counselled the monarch who chose wisdom—"an understanding heart to rule this people"—rather than riches or honors. Every leader of an armed forces' smaller-unit, tempted to be a little blind to the faults of men with whom he has direct contacts daily—faults commonly called "minor offenses," is urged to heed that admonition. For each such commander, those shortcomings are "the little foxes that spoil the vines": discipline and military efficiency disappear, and his own failure is not far off, when misdeeds which seem relatively unimportant at the moment are habitually not punished.

For taking those little foxes, the President has directed free but intelligent employment of Article 15 in the Uniform Code of Military Justice, entitled "Non-judicial punishment." Each commander, in doing so, is expected to comply with the regulations that are found in Chapter XXVI of the 1951 Manual for Courts-Martial. The cited law, thus implemented, replaces "Company punishment" formerly used by the Army and the Air Force, as well as

the Navy and Coast Guard device known as "Captain's mast." This new authorization for summarily ordered penalties differs substantially from those now obsolete sanctions. Be alert!

### Minor Offenses

Congress has limited non-judicial punishment to "minor offenses," an undefined term commonly believed to refer to those unaggravated instances of misconduct, primarily prejudicial to good order and discipline rather than criminal, for which a summary court-martial trial would be appropriate. The Commander-in-Chief has confidence in the ability of each smaller-unit leader to determine whether a particular misdeed is one of that sort. Senior commanders rarely interfere, unless the act non-judicially punished is one for which a punitive Article of the new code authorizes the execution of the offender, or unless that act could be punished under a Federal statute by confinement for one year or more, or unless it is tainted with moral turpitude. The President has flatly forbidden that sort of penalization in all such instances, no matter how weak the proof or how great the known extenuation.

The punitive Articles that denote capital offenses are: 85, 90, 94, 99-102, 104, 106, 110, 113, 118, and 120. All are adequately explained in Chapter XXVIII of the

current Manual for Courts-Martial. Most officers can easily avoid violating the first prohibition by reading these Articles about once every six months. As to some of them, which can be committed only during a time of war; it is advisable to read the cited explanations also; but each forbids action readily recognizable as a grave felony rather than a minor offense. All the other punitive Articles, except 86, 87, and 89—AWOL and disrespect, condemn misdeeds punishable by confinement for one year or more, though some of them also forbid behavior not subject to such severe retribution. Get familiar with all—I mean *all*—the facts of the misconduct under scrutiny, select the Article you deem violated—usually No. 134 (AW 96) when non-judicial punishment is likely to be permissible, and then turn to page 224 of the Manual (Table of Maximum Punishments) where you can easily see whether the second prohibition prevents the course you contemplate. If either execution or confinement for one year or more is possible—however improbable, non-judicial punishment is forbidden.

Larceny, passing bad checks, forgery, and maiming have been declared by the President to be tainted with moral turpitude. Respectable authority can also be found for so considering all misdeeds in the committing of which there is fraud, as well as most sexual offenses, libel or

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slander, aggravated misappropriation less than theft, unauthorized distribution (or even unsanctioned possession) of habit forming drugs, false swearing—in or out of court, spreading subversive propaganda orally or otherwise, and in fact any misconduct which discloses the culprit to be base, vile, or depraved.

A commanding officer has some discretion to decide whether moral turpitude taints an act under his scrutiny. The culprit's intent is often controlling. Thus, careless handling of a fund—there being no effort to obtain a personal gain—reveals no moral turpitude and is punishable summarily; but the mere act of presenting an unwarranted pecuniary claim against the government, there being neither ignorance nor mistake, does show that quality and must be penalized (if at all) by a court-martial. The commander's discretion ends when he has observed moral turpitude in the act under examination or should have recognized its presence there. His non-judicial punishment order issued afterwards (like one in a capital case or where a full year's confinement is possible) will be totally void, not merely subject to correction on a timely complaint.

#### **Per se vs Prohibitum**

Behavior which is objectionable only because competent authority has forbidden such an act, either generally or at certain times or in stated places, is often non-judicially punishable as a minor offense. Consider the effect of the conduct under review upon the discipline or reputation of the unit. Give due weight to its nature, to when and where it happened, as well as to the persons by whom the act was committed and against whom it was directed. But be sure that what the suspect has done is not wrong for some other reason than because "there's a law against it." Rarely is an act which people usually consider inherently evil (*malum per se*, as the lawyers say) punishable non-judicially; but those actions which folks quite generally treat as mere peccadillos (that is, *malum prohibitum*) usually can be so penalized.

Escape, willful disobedience, interference with a sentinel on his post, and protracted absence without leave are presumptively not punishable

non-judicially. Being drunk and disorderly can often be so considered, and so may many assaults whereby no real physical harm occurs. Whether the misconduct is a military offense—one which directly tends to hamper or disrupt the orderly operation or administration of a military unit, or a civilian offense—one which is a threat to the peace or welfare of the community, is of little importance. Apply the rules and principles I have mentioned with respect to minor offenses: then, if not sure of your decision, here is the way to test it.

First, be certain you have all the relevant facts, because a lawful though inadvisable order directing a non-judicial punishment (if enforced) bars a subsequent trial by a court-martial for the same offense, and it warrants mitigation of such a tribunal's sentence for another offense involved in the same incident. Then turn to the Table of Maximum Punishments, and withhold such an order when more than sixty days of confinement (disregarding the Table of Equivalents) is possible for the misbehavior shown by the facts you gathered. Unless, of course, there is exceptionally strong extenuation thus disclosed; though one should ordinarily then punish non-judicially for a lesser offense involved in the incident. This constitutes but a rule-of-thumb, without legal sanction; but it works. The result of using it generally satisfies a superior who has shown an interest in what you did with a particular case.

#### **Procedure**

None but the uniformed members of a command (its military personnel, that is) may be non-judicially punished. The law is now in accord with long usage. Penalties that may be summarily imposed on convicted persons, prisoners of war, and others—particularly by the Captain of a ship at sea—are lawful because of other authority than that found in Article 15 UCMJ.

Every non-judicial punishment order must be given by a person between whom and the culprit there is a command relationship at the moment the order is spoken, regardless of a different status earlier or later; and as a matter of policy, by the authorized officer most immediately in command over the accused who is

not prevented therefrom by any regulation or by an order of a superior. In all the armed forces, such an order is normally given by a commissioned officer, or in the Navy or Coast Guard by a commissioned warrant officer; but it has been semiofficially declared that by virtue of Article 15 *b, c* UCMJ a noncommissioned or petty officer (if designated by the Secretary as an officer-in-charge) may non-judicially punish: a questionable conclusion, methinks. That the imposer of the penalty and the offender belong to different armed forces has no legal significance, if they are actually in a commander and follower relationship to each other for disciplinary and administrative purposes; but a glance at the regulations for reciprocal court-martial jurisdiction is an eloquent warning that use of non-judicial punishment in such a case is likely to be frowned upon. A staff officer (as such) cannot summarily punish anyone lawfully.

#### **Immediate Action!**

It is immaterial where the offense was committed. The date of the misconduct, if within the culprit's current period of service and not over two years before the non-judicial punishment order is given, has no legal significance; but a clear-thinking commander rarely penalizes summarily for misbehavior of which he has had notice more than a week. Immediate action is of the essence of success in such matters.

The punishing commander must personally decide whether a non-judicial punishment is warranted; and if so, he must order the retribution himself, preferably in the presence of the culprit. All other actions in accomplishing such a penalization may be done for him by other persons; but a smart commander will do as much as possible for himself. He knows that enlisted men will not long remain mistaken as to who actually punishes or rewards them, and he cannot afford to give them any basis for thinking it is anyone other than himself.

Each non-judicial punishment order in the Army or Air Force has five prerequisites. There must first be a thorough and impartial investigation—usually conducted informally and without the accused present until the last, if at all. Then a notice must



be given to the culprit (written, if he is an officer or warrant officer) that his commander intends such a penalization, and for what offense; which second requisite calls for the third one—an express or necessarily implied waiver of trial by a court-martial, after a reminder of that right and a reasonable time to consider the choice. The fourth step (optional with the accused) is a submission of facts “in mitigation, extenuation, or defense”—an indorsement on the original notice when that is written, otherwise oral or written as the accused may choose. The fifth and final requirement is an inquiry by the commander concerning what is thus submitted, unless the latter already knows those facts to be true and so informs the accused.

### Navy Procedure

In the Navy or Coast Guard, a non-judicial punishment order may be issued upon reading the report and approved findings of a court of inquiry or a board of investigation, when the accused has had a chance to present his side of the incident to such court or board. In other cases, the accused is notified—orally or in writing—to present himself “at the mast” or he is conducted there. Upon arrival he is told what misbehavior by him is of immediate concern to the commander, who is then bound to conduct a thorough and impartial inquiry with the accused present, which inquiry must include whatever facts “in mitigation, extenuation, or defense” the latter chooses to assert. If the suspect is an officer and no court or board proceedings are being used, a written notice of intent and that officer’s written response, as in the Army or Air Force, but done in accord with Navy or Coast Guard correspondence directives, is lawful. There may be an actual hearing “at the mast” instead of such action, or to supplement the same, in the discretion of the punishing officer; and there is likely to be one if the accused does not admit the asserted misbehavior or when he asserts facts “in mitigation, extenuation, or defense” which the commander does not concede to be true.

All questioning of the accused is to be in conformity to Article 31 UCMJ: that is, there is to be none at all unless he is warned of his rights

thereunder and then answers voluntarily. Note, however, in this connection and with respect to other procedural matters, that no relief from a commander’s improper action is possible in the absence of clear proof of an injury to a culprit’s substantial right which was neither expressly nor impliedly waived by him.

### Punishment Orders

Unless the original notice was written, the punishment order is oral: in those other cases, it is written as required by departmental correspondence directives. All oral orders, and such of the others as the immediate commander of the accused wishes, are to be registered in accord with paragraph 135*b*, and appendix 3*a*, MCM ’51; but (in practice) there is no penalty for not doing so, or for carelessly complying, or for losing the record—all of which often happen. The plan is a mere memory-jogger for one who already knows of the case: it is substantially valueless to a successor, or to a superior who seeks to learn how the culprit’s immediate commander has habitually used his power.

Enforcement is the immediate commanding officer’s responsibility, but most of the necessary action is taken by his noncommissioned subordinates. The culprit has two ways to avoid the punishment—an appeal or a request for clemency—neither of which will ordinarily be successful or even stop immediate action to put the penalty into effect. He must be told of the first—an appeal—when he is informed what the punishment order requires; but the other is one of which he learns the best way he can.

An Appeal is a military letter to “the next superior” of the officer who made the order. It is handed to the offender’s immediate commander who must forthwith forward it with such an indorsement as he deems appropriate. Nothing can be urged in such a letter but that the penalty is too severe; and a prompt decision by the officer addressed is mandatory. His ruling is final, but he can grant no relief other than suspension, mitigation, or remission of unexecuted portions of the order.

The offender’s request for clemency, also a military letter, is addressed to the officer who imposed

the punishment, or to his successor, or to any superior rather than “the next superior,” at the option of the applicant. It normally goes to the immediate commanding officer first and is ordinarily forwarded—unless obviously without merit, which no commander will hastily conclude—until it reaches a commanding officer who has access to a staff judge advocate and usually has general court-martial jurisdiction also, though any intermediate commander may take action thereon. By such a letter any commonly known basis for clemency—including serious procedural errors and even a reasonable doubt of guilt—may be urged. Action is discretionary thereon, and when taken it is final except for a possible use of Article 138 UCMJ—Complaint of wrongs; but it may include restoration of any right or property (say, forfeited pay) affected by the non-judicial punishment order.

### Permitted Penalties

Seven sorts of non-judicial punishment are sanctioned: first, withholding of privileges; second, restriction to certain specified limits; third, forfeiture of the pay of an officer or warrant officer; fourth, extra duties; fifth, reduction in grade; sixth, confinement—when on a ship; and seventh, admonition or reprimand. As heretofore, the seventh may be combined with any other one; but contrary to the former rule, only one of the six may be used for a single offense: pro-rating several within the authorized period is not allowed.

Each of the permitted penalties had a counterpart (identical or closely akin) in one or more of the armed forces, but none had them all. Probably some other punishment “similar in nature” to one of these is lawful, as it was under the 104th Article of War; but I have found no record of any commander having devised such a penalty and having gotten official approval for it as one “similar in nature.” Better not attempt to do so. All “cruel and unusual” penalties are forbidden.

Whatever the grade or rank of the offender, any one of the privileges he ordinarily enjoys—but not several of them, either at the same moment or seriatim—may be withheld for as long as “two consecutive weeks.” It is not unlawful, however, to order a par-



ticular privilege withheld just because enforcing that order will have the practical effect of denying the culprit enjoyment of some other privilege.

The words "two consecutive weeks" mean fourteen days one after the other with no interruption, the first being the day on which the order is issued, or on which the culprit learns of its provisions when that is on a different day. A fraction of a day must be counted as a full day; and each of the fourteen (or less) days ends at 2400 hours, unless the punishment order otherwise provides without exceeding the maximum period. Treating the first Reveille after the directed number of days as the end of the punishment, and having each day end at Retreat or Taps, must now be expressly ordered and be capable of enforcement without using more than the allowed time, if that sort of computation is desired.

#### **Rights or Privileges?**

Rights must not be withheld as non-judicial punishment: but to distinguish a right from a privilege is not always easy. Most folks treat as a privilege any optional action allowed to all well-behaved military personnel as a matter of normal procedure, with or without a request or pass though often only in accord with a plan stated in some directive. A right, on the other hand, is an optional action which has accrued to a particular person by reason of his having accomplished extra tasks or because he has performed his ordinary duty exceptionally well—for the previously declared purpose of enjoying that action, after having been told on what terms it would be available to him.

Before using this penalty, ascertain which privileges a particular culprit values: then deny him the one likely to cause him the most discomfort. Blindly forbidding him to do something his fellows can do, without knowing whether he especially wishes to join them, is not showing good sense: such an order may have no corrective power at all. Your non-commissioned officers should know his habits; and so should you in a short time, if you really want to succeed.

That suggestion is particularly pertinent when withholding the privi-

lege of leaving the post—a deprivation which the law calls "restriction to certain specified limits" and unduly dignifies as a separate non-judicial punishment. Learn where the offender would probably go (on or off the post) if he were free to proceed where he may desire; and then order him to stay in some other place of such size and location as may be appropriate to his guilt. Describe the place so carefully that he cannot unintentionally cross the bounds, else you may have trouble should a trial for breach of the restriction become necessary. Provide for his messing, bathing, exercise, and use of latrines: these must not be heedlessly or entirely denied.

Lest a restriction prove a welcome relief from current drudgery, enforcement only during "off-duty" hours should be directed. That long-established practice is now clearly authorized. What (if anything) has happened to the presumption that when a commander did not mention the subject a restriction prevented all duty outside the specified limits is not stated. A suspension from duty will usually make the punishment smart less—not more; for such a direction plainly does not affect the culprit's pay. A ruling to the contrary would mean several things which ought not to rest on inference alone. It would mean that an enlisted man's pay could be forfeited indirectly but not openly; that a commander not authorized to forfeit the pay of an officer or a warrant officer could do just that in defiance of the statute; and that in any case the restriction would be two penalties, though the law says plainly that only one may be used.

#### **Arrest or Confinement?**

Arrest in quarters is not "similar in nature."

Enforcement of a restriction by locked doors or a special guard makes it confinement, which is permitted only on shipboard and must be selected as the penalty at the outset.

No military personnel could be summarily deprived of pay as punishment before March in 1917. Thereafter, for 32 years, that could happen to Lieutenants and Captains "in time of war or grave public emergency." Then during twenty-eight inglorious months after the first of February

1949 we tried (with little success, I hope) to turn all officers below Brigadier General, and all warrant officers, into toadies or scoff-laws by the day-in and day-out forfeiture provision enacted in 1948. Under the UCMJ (still as a routine practice, not as a war or emergency measure) it will be permissible to take one-half a month's pay from any officer (Generals and Admirals included), or from any warrant officer, as punishment for a minor offense, when the order is given by an officer having general court-martial jurisdiction—who will presumably have enough judgment to use the power only on rare occasions.

#### **With Absolution**

The mere existence every day, for all the armed forces, of a substantially painless way to avoid well-deserved consequences augurs ill for our ancient policy of requiring officers to conduct themselves in conformity to a stricter standard than others were required to meet. Its effect can scarcely be other than that of a Police Violations Bureau, where offenders may pay a relatively small sum and depart with absolution: a scheme tolerable in a civil community only when lawlessness in small matters is so common the courts cannot cope with it. When that situation, coupled with the widespread lack of self-discipline which always fathers it, strikes a military command, real trouble for its leader, from the people who have put that command into uniform and are paying its cost, is not far ahead.

"Extra duties"—an undefined term—"for a period not to exceed two consecutive weeks, and not to exceed two hours per day, holidays included" is the new code's authorization for compulsory labor as a summarily imposed punishment. It can be used only for enlisted offenders. Labor which serves no useful purpose toward accomplishing the command's current mission must not be ordered. Noncommissioned and petty officers cannot be ordered to perform any duty other than one of those ordinarily undertaken by such persons who have conducted themselves properly. In lieu of flatly forbidding (as heretofore) the imposition of "military duties" as a punishment, the current prohibition is limited to "for-



mal military duties" and to those "requiring the exercise of a high sense of responsibility"; but every wise commander will be hesitant to thus utilize any duty that is distinctive of the ancient and honorable profession of arms. As in the past, furthermore, a culprit's ordinary duties—particularly those of a clearly military nature—must have precedence over his performance of labor as a punishment.

Familiar practices of the Army and the Air Force with respect to enforcing "extra fatigue" and "hard labor without confinement" are obsolete. The daily maximum of two hours will usually rule out even such tasks as kitchen police and escort for the rose wagon, as well as others wherein physical exertion is the chief ingredient: one just cannot get such jobs finished so promptly. I've talked to officers of the Navy and the Coast Guard, the Services which previously had this summary penalty: they all seem remarkably unfamiliar with the limitations I have cited—especially the daily maximum. Any smaller-unit commander in any of the armed forces who uses this penalty effectively, having a due regard for the rules and principles applicable, should be hailed "A Daniel come to judgment! Yea, a Daniel! O wise young judge how I do honor thee!"

### Reduction

"Reduction to the next inferior grade," a penalty said to work well in the Navy, is now available for punishing enlisted men in the other armed forces. It looks remarkably like a servant the Army discharged without a "character" many decades ago, because of a very general observation that an experienced soldier who has lost his stripes is usually a serious liability. Little can be said for this punishment as a morale and discipline builder which cannot also be said with respect to paying the installments on an engagement ring after the girl has married a rival.

Paragraph 131b (2) (c), (3) (c) MCM '51, with the aid of undisclosed departmental regulations—probably because too subject to change, indicates (consistently with Article 15a (2) (D) UCMJ, I hope) which commanding officers can use this non-judicial punishment power in a particular case. Never employ it without

a current review of the directives of your own armed force concerning how a member thereof may be raised to the grade then held by the culprit you plan to "bust"; and if you are in the Army, you must have a place in its hierarchy above that of Captain, when the culprit is an NCO. Be cautious: though the voice is Jacob's the hands are those of Esau. You are neither old nor have your eyes grown dim—since you are still on active duty; but can one say as much for the Congress which voted this penalty (tantamount to a stinging forfeiture of pay) after having repeatedly—even when enacting the UCMJ—rejected unqualifiedly an open and above-board forfeiture of the pay of enlisted persons?

### Confinement

Confinement, heretofore unknown to the Army or the Air Force as a summarily imposable punishment for "minor offenses," is now authorized in two forms for that purpose, in deference to the Navy, when the culprit is an enlisted man "attached to or embarked in a vessel" but is neither a noncommissioned nor petty officer. It may be ordered—presumably with hard labor but full rations—for not to exceed seven consecutive days, or "on bread and water or diminished rations"—which (in practice) must mean solitary confinement in order to be effective—for not to exceed three consecutive days. A fraction of a day at the beginning or end of a period must be counted a whole day; and each day within a specified punishment term ends at 2400 hours, unless otherwise specifically ordered.

Some commanding officers of the Army and the Air Force, en route overseas by a protracted zig-zag course with twice as many enlisted men aboard as could either be decently accommodated or kept busy, have fervently (albeit irreverently) expressed desires for a much larger brig than can be found in any transport. But when again safely ashore, they have easily been re-convinced that neither of these forms of confinement will really be needed for "minor offenses," especially the latter which we have long deemed appropriate only for hardened recalcitrants.

Undoubtedly, most of you have encountered commanders who admonish with more vigor and sharpness than

characterize reprimands by others: there is no sure way to tell these punishments apart, no particular language being required for either. Wise commanding officers administer them both orally and in private, even when the censure must also be written and sent through channels; else these penalties lose much of their immediate corrective force. Such commanders will eschew terms that are equally applicable to any misbehavior; their comments will fit both the misconduct and the culprits; they will avoid repeating remarks recently uttered—especially, if published also—in criticism of actions by other offenders; and of course, they must never stoop to profanity or vulgarity, whatever the mentality of the offender then being disciplined. Abusive remarks will not be permitted.

Unless a particular commander's enlisted subordinates respect and trust him far more than is customary, these penalties are useless against them. Best not to ever consider admonition or reprimand for persons below the first three enlisted grades, and as to the latter only rarely. Be cautious also as to officers and warrant officers, with respect to whom the punishments must be written, for admonitions and reprimands may appear years later in a personnel file, to adversely affect a well-earned promotion or a desired assignment, long after the relatively inconsequential incident that brought them into existence has faded from memory.

### A Man's Place . . .

All these seven punishments are intended only to promptly discourage troublesome but not wicked misbehavior by those who cannot (or will not) take a man's place in the activities of their unit, or who yield frequently to an inclination for prohibited action which is not inherently evil. Such penalties are designed to take the little foxes that spoil the vines, and should not be expected to do more; nor should there be resort to them, for controlling the same man, more often than once a month or thrice in any calendar year, even when a superior will permit so much employment of non-judicial punishment. If that amount does not suffice, a court-martial or a separation board is probably needed—if not a new commanding officer for the outfit.



# You Need Tanks to Train Tankers!

by CAPTAIN ROBERT S. CUTHERELL

**T**HE title chosen for this article states a basic truth known to all experienced personnel responsible for any part of the training of tank crewmen. There are the two extreme positions to be taken concerning tank availability in an armored unit during its infancy. The first, and obviously unsatisfactory position, is to try to train an armored unit without tanks. The opposite position is to train with all the tanks authorized under a particular TO&E. This, too, is unsatisfactory because during the earlier stages of training, the majority of personnel normally assigned are not capable of performing adequate maintenance. Such an authorization would also detract from the normal training mission, if imposed at an incorrect time. The position in between these two extremes is the area that is often the most perplexing when tied in with the training mission and consequently necessitates the greatest study and analysis.

The Army Training Program (ATP) under which advanced individual training is currently conducted in an armored division is ATP 17-201 (Mobilization) (Tentative). This eight-week training program of 384 hours has been chosen for analytical treatment, due primarily to the fact that during this period fillers are trained to perform assigned tasks as tank crewmen. Inasmuch as tankers completing this phase of training may be designated as cadremen for the formation of other armored divisions or as replacement personnel for all types of armored units, it is obvious that this period is of importance under a rapid

mobilization, aside from considerations of providing tank crewmen for duty within the eventually developed parent armored division.

It seems axiomatic to state that each S-3 charged with the supervision of training under ATP 17-201 should make a detailed, and perhaps weekly, analysis of this program and inform his commanders accordingly. The first and basic problem and one which is not readily apparent, is the question of the number of "tank-hours" instruction time the ATP directs. (The term "tank-hours" is used to signify the number of hours instruction on a topic requiring the physical presence of a tank. It is determined by multiplying the instructional hours in any one topic requiring tanks by the desired tank strength in the units.) *This question has not been answered by the ATP!* The S-3

will search in vain for an equipment authorization linked with and correlated to this ATP. In the absence of a standard, commanders must formulate their own in order to achieve the assigned training mission.

A negative approach will perhaps best illustrate the difficulty the commander can expect if his S-3 is so unwary as to fail to find a solution to the problems of correlation between vehicular (primarily tank) status and training analysis.

The ATP specifies 384 hours of instruction during an 8-week period. For planning purposes, the accompanying Master Training Schedule indicates the assignment of subjects by week utilized by units under CC "A," 1st Armored Division, during the Advanced Individual Training period.

For the purpose of the desired

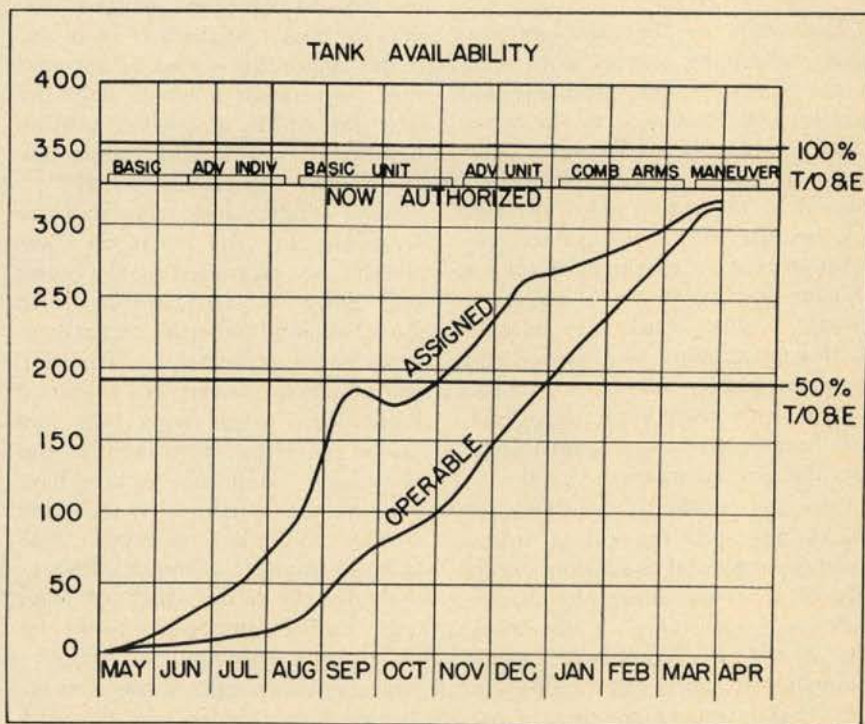


Chart I

CAPTAIN ROBERT S. CUTHERELL is a Reserve officer who has just completed a two-year active tour, most of which was as S3 of CCA, First Armored Division, Fort Hood, Tex.



analysis, it is pertinent to note that each of the 384 hours may be divided *primarily* into one or more of three categories, the first two according to vehicles (primarily tanks) and the third according to time:

I. Instruction requiring tanks (*i.e.*, Driving Instruction, Operation and Maintenance of Tank Guns, etc.).

II. Instruction *not* requiring tanks (*i.e.*, Scouting and Patrolling, Binoculars and Mil formula) and capable of being shifted from one week to another and earlier week, without harm to orderly instruction or to the training mission. (*i.e.*, There are 59 such hours in ATP 17-201 or 15% of the time allotted to ATP 17-201.) For the purpose of this analysis this type of instruction will be referred to as "Fluid Subjects."

III. Instruction required within any one assigned week. (*i.e.*, Troop Information Program, now termed Command Conference Hour, Physical Training, etc.) For the purpose of this analysis, this type of instruction will be referred to as "Anchored Subjects."

The realization of these three categories of subjects provides the groundwork for an analytical technique which will enable the alert S-3 to keep his commander currently and adequately informed.

During the first week of Advanced Individual Training, 26 hours may normally be expected to be devoted to instruction requiring tanks and 22 hours of "Fluid" and "Anchored" subjects would complete the 48-hour training week. For this discussion I have assumed that a given battalion has an assigned tank strength of 25% of the TO&E, and 10-15% are inoperative during Advanced Individual Training. Chart I is helpful in illustrating an armored division's tank availability during Advanced Individual Training.

Experience has shown that 30% of the TO&E is desirable at this stage of training. To accomplish the mission, therefore, it is apparent that 574 "tank-hours" of instruction are required. (Twenty-two—30% of the TO&E—tanks multiplied by 26 hours of instruction for the first week equals 574 tank-hours.) With an average of only 7 tanks per battalion it becomes apparent that to achieve the same training, 82 hours (7 tanks

## MASTER TRAINING SCHEDULE ADVANCED INDIVIDUAL TNG ATP 17-201\*

SUBJECT	TOTAL	1	2	3	4	5	6	7	8
<b>GENERAL SUBJECTS</b>									
Dismounted Drill and Ceremonies	4			1				1	2
First Aid	1						1		
Map and Aerial Photo Reading	5			2	3				
Scouting and Patrolling	2				2				
Intelligence Training	3						3		
Marches and Bivouacs	2								2
Mine Warfare	5						3		2
Concealment, Cover and Camouflage	1								1
Inspections	8	1	1	1	1	1	1	1	1
Physical Training	20	2	2	2	3	2	3	3	3
Achievements Tests	2								2
Troop Information Program	8	1	1	1	1	1	1	1	1
Recognition Enemy Armored Veh	1				1				
Hasty Fortifications	5								5
<b>WEAPONS INSTRUCTIONS</b>									
Turret Familiarization	3		3						
Disassembly and Assembly of the tank Gun	4	4							
Operation and Maintenance of the Tank Gun	4	2	2						
Power Traverse	3		3						
Gyrostabilizer	3		3						
Ammo Identification & Inspection	4	1	2		1				
Binocular and Mil Formula	2		2						
Direct Fire Sights	3		3						
Auxiliary Fire Control Instruments	3		3						
Crew Drill	4			4					
Gunners Preliminary Examination	16					16			
Range Determination	3			3					
Conduct of Fire	7			3	4				
Crew Non-firing Exercise	6			4	2				
Subcaliber Firing Manipulation and Shot Adjustments at Stationary Targets	8				8				
Subcaliber, Firing HE Miniature	6					6			
Service Firing w/Coaxial M6 while Tank is Moving	6						6		
Service Firing HE and Shot Adjustments	6						6		
Service Firing at Moving Targets	6						6		
Familiarization SMG	4							4	
Familiarization, MG Cal. .50	6							6	
Familiarization, Pistol Cal. .45	6							6	
<b>DRIVING AND MAINTENANCE</b>									
Preliminary Instruction	24	16	8						
Driving Instruction	48	6	6	6	6	6	6	6	6
Crew Maintenance	32	4	4	4	4	4	4	4	4
Weekly Maintenance Service	32	4	4	4	4	4	4	4	4
Night Driving	18							9	9
<b>COMMUNICATION INSTRUCTION</b>									
Radio Telephone Procedure	6		2	2	2				
Operation and Maintenance of Radio	8	1	2	2		3			
Radio Nets	1	1							
Operation of Tank Interphone Systems	1	1							
Field Messages	2	1				1			
Wire Communication	2				2				
Commanders Time	30	3	3	3	4	4	4	3	6
<b>TOTALS</b>	<b>384</b>	<b>48</b>	<b>48</b>	<b>48</b>	<b>48</b>	<b>48</b>	<b>48</b>	<b>48</b>	<b>48</b>

\*(Note: This Master Training Schedule was used for planning purposes in CC "A," 1st AD, but was adjusted as required by the availability of ranges, training areas, etc.)



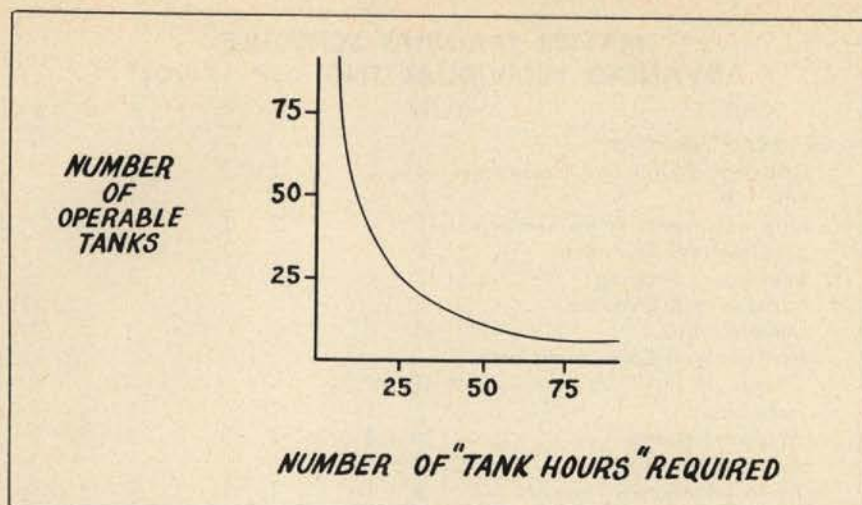


Chart III

times 82 hours equals 574 "tank-hours" of instruction) must be utilized with the available tank strength to produce the desired training result.

To accomplish this training during the first week plus 22 hours of "Anchored Subjects" (all hours other than those requiring tanks in the first week are considered as "Anchored" due to the definition "that they are capable of being shifted to an earlier time *only* during the 8-week period) is obviously impossible. Therefore a decision must be made as to what part of the tank training is to be accomplished during the first week, and what part deferred until a later date.

To utilize the tanks assigned and operable on a basis reasonably calculated to produce trained tankers, it then appears desirable to allocate approximately 6 hours' instruction requiring tanks during the first week and assign 20 hours of "Fluid Subjects" (borrowed from their normally assigned places in the later phases of

training). This, combined with 22 hours of "Anchored Subjects," would then constitute the first week of training.

An analysis for the second week of training reveals that 5 hours of instruction are devoted to topics not requiring tanks, 32 hours of instruction requiring tanks, and 11 hours of "Anchored Subjects." Assuming no notable increase in tank strength and based upon an analysis similar to the third week, I submit that it would become necessary to borrow 24 hours of "Fluid Subjects" from the instruction assigned to later weeks of ATP 17-201. This of course leaves only 10 hours of "Fluid Subjects" to borrow during the last 6 weeks.

With no substantial increase in the tank strength, an analysis of the third week reveals 12 hours of "Anchored Subjects," 8 hours' instruction not requiring tanks, and the remaining 28 hours requiring tanks for instruction. It is apparent that we can instruct only for 7 hours with our present tank strength. Even if we

decide to borrow the final 10 "Fluid Subjects" and assign them to the third week, it becomes apparent that we are short 11 hours' instruction, for which period the ATP does not suffice or specify an answer. What is the answer?

The situation described in the analysis of the third week is precisely where CC "A," 1st Armored Division found itself during the third week of Advanced Individual Training. The only practicable answer was to re-train in subjects appearing deficient, and direct such substitute tank training as was allowed by the availability of training aids and qualified instructor personnel. The real problem, of course, faced CC "A" in the weeks to follow, testing the ingenuity and efforts of all commanders. It was only expert and determined leadership in the later stages of this critical situation that permitted S-3's to warn their commanders at appropriate levels, thus minimizing the resulting deficiencies.

There are other implications beyond the scope of this report. I refer to the commanders' estimate of the unit preparedness. Long a subjective concept, this estimate could become more meaningful and capable of objective analysis if a specified "Tank Phase-in Program" were part of the ATP. It would appear, too, that a unit retaining the personnel trained under such obstacles would be able to overcome any resulting deficiencies at a later date, which was the situation encountered by units within the 1st Armored Division. If, however, individuals were to be taken out at the end of such Advanced Individual Training in a period of rapid mobilization or as required for overseas replacement, the inevitable result would be tankers in name only.

## Washington's Official Map of Yorktown

A facsimile reproduction of the map of Yorktown at the time of Cornwallis' surrender, which resulted in American independence, with accompanying text, giving the historical significance of the map. The map may be removed for framing if desired. 1952. 5 p. map.

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## THE SHOULDERS OF FAITH

**GEORGE WASHINGTON, Vol-  
ume V. By Douglas Southall  
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Reviewed by  
**LYNN MONTROSS**

Remote as the American Revolution may appear, it is closer in some respects than the Civil War to our military experience of the present century. This is the moral of Volume V of Douglas Southall Freeman's biography of George Washington, covering the five years and eight months from the French alliance to the postwar months of 1783.

Washington, in short, had to get

along with foreign allies, even as Pershing in 1918 and Eisenhower in 1945. And any commander who has made the best of that situation knows that colleagues of alien nations may have little in common save a chafing yoke.

Not many readers of Dr. Freeman's minutely documented study could continue to view Washington's war as a simple struggle because it was waged by little armies with weapons now gathering dust in the attic of progress. "It is an educational mistake," says the biographer in his introduction, "to assume that the small scale and antiquated tactics of the Revolutionary War make it unworthy of examination by students, professional and amateur. All the perversities of human nature that bedevil a commander and some examples of stubborn pettiness almost unique, are to be observed in Washington's campaigns. . . . Much of the military history of the years reviewed here is rich, also, in illustration of what happens to supply and to public finance when war weariness overtakes a people. Still more is to be learned about the maintenance of amity and co-operation between war-time allies."

The period covered by Volume V takes Washington from the age of 46 nearly to his 52d birthday. He had reached the peak of his intellectual powers while retaining a noteworthy degree of physical vigor and endurance. On one occasion he rode 60 miles in a day, and during a postwar trip to the West the 51-year-old tourist traveled 750 miles on horseback in nineteen days.

Even the durable Washington might have been dismayed, however,

if he had suspected at the time of the French alliance that five more anxious years of war stretched ahead. Nearly three years of experience lay behind him—years in which he had at least kept an army in the field until Gates' victory at Saratoga brought France into the war as an open rather than secret ally.

During this apprenticeship Washington was defeated in his three largest battles, Long Island, the Brandywine and Germantown. On the other hand, he had won the admiration of his opponents with his brilliant little Trenton-Princeton operation—a double play that saved the game when it appeared to be irrevocably lost.

The father of his country has sel-

—The Author—



Dementi Studio

Douglas Southall Freeman is one of the leading historians of the day. Editor and lecturer, he is author of such standard works as the noted four-volume biography of R. E. Lee (1934), and a three-volume Lee's Lieutenants (1942-44). He is now engaged in writing the biography of George Washington, a multivolume work of which this is the fifth.

—The Reviewer—



George V. Brothers

Lynn Montross is a newspaperman and novelist who turned to the study of history and soon established his reputation in this field. He is the author of several books on the Revolutionary period, including *The Reluctant Rebels* (1950) and a new volume reviewed here recently, *Rag, Tag and Bobtail*. He is now with the Historical Division, USMC.



dom been lauded as a top-drawer general even by critics who credit him with great leadership. This negative verdict appears to be supported by the results of Monmouth. Two months after the news of the French alliance, Washington muffed perhaps his greatest opportunity for a smashing battlefield triumph. General Sir Henry Clinton, retreating from Philadelphia, presented the flank of a column ten miles long. Washington, taking a parallel route with equal numbers of about 10,000, led his largest force so far of trained troops—the Continentals drilled by Steuben at Valley Forge. American morale was high, and even the terrific June heat favored an army in shirtsleeves to beat overburdened redcoats.

The great Napoleon was indecisive on several fields a generation later, so that Washington may perhaps be pardoned for the irresolution that made Monmouth an empty and disappointing American victory. Dr. Freeman finds extenuating circumstances, but the fact persists that American attacks were delivered piecemeal and the British were the aggressors at critical moments. Clinton had double the American losses but he brought his vulnerable column through safely to New York.

It was at this time that Washington hit upon the fixed idea which led down the years to the winning of American independence. Saratoga had brought the French alliance, and he aspired to another Saratoga made possible by that partnership.

Washington had no expectation of strangling another Burgoyne who ventured too far from his base of



Illustrations from *George Washington THE GREATEST HOUR OF WASHINGTON THE SOLDIER*. Washington at Yorktown with Lafayette and Tench Tilghman. A column of French and American troops has just passed in review. Tilghman has in his hands the articles of Cornwallis' capitulation, which he is to carry to Philadelphia for formal presentation to Congress.

supplies. The new Saratoga was to be a Franco-American naval and land operation at the expense of some British general (the name to be filled in later) trapped on the seacoast. British naval power had doubled the effectiveness of the invaders, and Washington proposed to give them a dose of their own medicine with the aid of the French fleet.

This was the beginning of a series of frustrated attempts to gain the decisive co-operation of French admirals. D'Estaing failed Washington shortly after Monmouth when the rebel commander planned to bottle up the British in New York, with his army closing in by land while the warships blockaded the harbor. The French admiral pleaded that the water was too shallow off Sandy Hook, though this excuse was challenged a century later by Mahan.

Washington rebounded with the proposal that his ally try again at Newport, where another British army was ripe for the plucking. This time a tempest intervened just as d'Estaing was about to fight a British squadron coming to the rescue. Afterwards the French admiral was unopposed, the storm having scattered the enemy ships. But d'Estaing abandoned the campaign and put into Boston for refitting, so that another opportunity went glimmering.

Sullivan, commanding the American land force, was so outspoken in his resentment that it took all of Washington's tact to patch things up with Count d'Estaing, a nobleman of volcanic emotions. Cordial relations were restored, nevertheless, even though a Boston mob showed its disapproval by killing a French officer.

Savannah was the scene of the next fiasco. Again Washington was not present, and Lincoln commanded the American contingent when d'Estaing's fleet arrived from the West Indies in the autumn of 1779. This time d'Estaing was dilatory when he should have been decisive, and impulsive when prudence was indicated. He allowed Lincoln little voice in major decisions, and the Franco-American attackers met a bloody repulse.

Once more Washington had to pour oil on the recriminations of his countrymen. The following winter was the most dismal of the war, and the starving little army at Morristown suffered worse hardships than those of Valley Forge. The word "logistics" was not then current, but it took all of Washington's leadership to scrape up enough supplies to keep the cause from perishing. He had to cope with the discontents of officers and war-weary lethargy of civilians while cherishing the French allies who represented his only hope of victory.

The strength of character which brought the commander through his trial is saluted by Dr. Freeman in the most eloquent passage of this volume:

"Patience, as always, was the stout-



Benedict Arnold . . . smiling.



Benjamin Lincoln—solid all the way through.





Hamilton—his the most brilliant mind.

est weapon of Washington in combatting the perplexities of circumstance and the perversity of man. He saw that the way to freedom in America was not a succession of night marches to Princeton and of frenzied charges down the main street of Germantown. It was not enough to feel the sleet of Trenton and the furious sun of Monmouth. Freedom was demand no less than reward. Part of the price was knowledge of the limitations of humankind, and readiness to reason with dull and stubborn mortals on the obvious as well as the obscure. Liberty meant iron discipline for the few because to the many it was license or laziness, plunder or non-participation. When tens of thousands grumblingly protested against the lightest load, the strong and the diligent . . . must carry burdens that only the shoulders of faith could assume."

Those shoulders enabled Washington to endure the winter at Morristown, the treason of Arnold, and the mutiny of the Pennsylvania line. Those shoulders enabled him to bear the added burden when his strategic plan met two more frustrations. Early in 1781 he hoped by means of French sea power to cut off one of the British forces raiding Virginia, but Admiral des Touches sent a boy to do a man's job when he parted with only three frigates of his squadron at Newport. Later he committed an adequate force, but too irresolutely for decisive gains.

Meanwhile the French army under Rochambeau in Rhode Island was being kept inactive for a year by British sea power. Not until the

early summer of 1781 did it join Washington on the Hudson, giving him hopes of trapping Clinton in New York if Admiral De Grasse could (or would) come from the West Indies with the main French fleet.

Rochambeau not only acknowledged Washington as generalissimo but proved to be the most understanding of all the allies. American independence, as Dr. Freeman points out, owes an unacknowledged debt to this greathearted Frenchman. He fell in with the hasty change in plans when De Grasse promised aid in Virginia for a sharply limited period. Thus it was Lord Cornwallis instead of Clinton who was set up for the knockout blow.

Considering the communications of 1781, it seems an authentic miracle that the Franco-American army in New York and the French fleet in the West Indies were able to meet in Virginia while Lafayette on the spot kept Cornwallis "amused" with his outweighed little army. The odds were against a timely junction, but fortune appears to have been atoning for Washington's buffets of the dark years. He had a moment of agonized despair, it is true, when De Grasse decided at the last minute to withdraw and offer battle on the high seas to the British squadron. The admiral, as Dr. Freeman puts it, was of "that not unfamiliar type that has to be persuaded to do what he knows he ought to do and probably intended all the while to do."

Washington applied the persuasion on a visit to the flagship, and the outcome was the supreme triumph



St. Clair, loyalty versus suspicion.



Rochambeau, the most generous of allies.

of his dealings with foreign allies. De Grasse consented to give his unstinted aid, which meant that Cornwallis was in a bad way. For on this occasion Washington had the command of the sea and the two-to-one material superiority on land which the British themselves had enjoyed so many times during the war.

After four years of frustration, Washington was now about to see his fixed strategic idea molded into fact. Washington was about to bring off his Saratoga, and the name of it was Yorktown.

So overwhelming were his advantages that he could scarcely have lost after cutting British escape routes. Thus it was as a strategist rather than tactician that the man of massive patience won his greatest victory—a victory giving his generalship a claim to more applause than it has usually received from biographers. For if there was no Chancellorsville in his career, neither was there a Gettysburg nor an Appomattox.

Dr. Freeman is at his best as an appraiser of generalship, and the present work adds a great deal to the stature of a distinguished Washington biography. It is a pity, in fact, that Volume V did not appear in time to comfort Pershing and Eisenhower in their contacts with foreign allies. They would probably have agreed that the age of the flintlock was not so far removed, after all, from the day of the machine gun, the tank, and the bombing plane. For a balky ally can be just as obdurate today as in the year of Yorktown.



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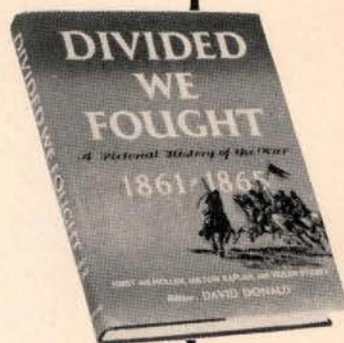
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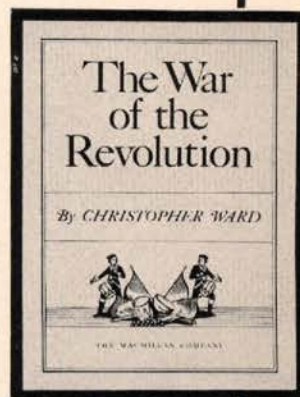
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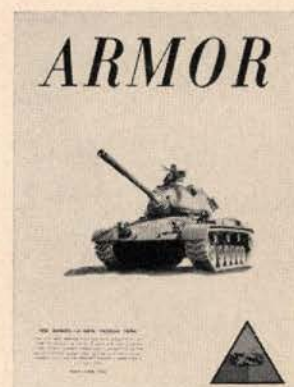
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# ARMOR

*The Magazine of Mobile Warfare*

Continuation of THE CAVALRY JOURNAL

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# The Great Frontier

by

Walter Prescott Webb

The Great Frontier presents a new theory of the history of the Western World since 1492 when Columbus opened the frontier lands to a static European society. For Mr. Webb the "Frontier" comprises all the exploited, habitable areas revealed by the explorations of the fifteenth, sixteenth, and seventeenth centuries. Owing to these discoveries, the modern era began; the accepted patterns of life were outgrown, and the Boom Era of four hundred years began. The problems which have staggered the world since 1912 are explained as the agonies of readjustment inherent in the ending of such an era.

**\$5.00**

## LETTERS to the EDITOR

### The Seelow Operation

Dear Sir:

This letter will be a bit late, but it takes ARMOR a long time to reach Berlin, and still longer before it comes into my office; but after reading the article "The Seelow Operation" (ARMOR, March-April 1952), I must write this letter to congratulate the author for the perfect reconstruction of the operation.

I was a member of the Volksartillery Corps 408 at that time, and was through the Seelow battle from the beginning to its bitter end. However, as there seem to have been some difficulties in explaining the complete failure of the German artillery, I shall try to clear up a few points.

After the first Russian attack on March 22nd, the 10.5 and 15cm guns had been withdrawn behind the ditch as shown in Sketch No. 2, and had moved into positions on the open field where they could easily be spotted; consequently, they were put out of action in the second attack on April 14-15 without having a chance of doing much harm themselves. The heavy artillery consisting of 21cm Mörsers and long range guns, which had been so effective in helping to destroy the first tank attack (the 16th Battery of 21cm guns alone knocked out 5 Russian tanks), and which had had their positions near Seelow, were withdrawn to a rather ineffective position west of Seelow from where they were unable to give a fire curtain along the ditch, their range being limited to 18 kilometers at the utmost. Besides this they were not allowed to change their positions freely for want of petrol. Although cars held 20 liters and trucks 40 liters in "iron reserve," special permission had to be obtained from the Corps Commander for every can of gasoline. The supply of ammunition was very poor; shots could be fired on orders of the Corps Commander only, who also could not act independently, since the Volksartillery Corps were not under sectional Army Com-

mand. So batteries were often reported "ready to fire," and at the same time did not fire as the daily ration of shells had been used up. For the same reasons, I also very much doubt that tanks were allowed to act as freely as the author of the article presumed.

The second most vital point of the failure of the artillery was the complete lack of experienced personnel. The Volksartillery Corps had been built up in the fall and winter of 1944, and were supplied with new guns and first class material, but the gunners had come from different reserve depots, and had in most cases never seen a 21cm gun before. They were trained and instructed over a period of about 10 to 21 days after which they had acquired a superficial knowledge only and completely lacked team spirit. As for officers, it remains to be said that the OC I/C of a battery mostly was a lieutenant 2nd class with little field experience. The observation officers also were Lieutenants 2nd Class or staff sergeants, and although fairly well trained to direct the fire, they entirely lacked field experience, the officers coming from war school being about 19 to 20 years of age, and the sergeants being either overage or physically unfit men who had spent most of the war in orderly rooms, Q stores or such positions. (When, for instance, no answer was received from the observation post of the 18th long range battery for 12 hours, it was found that the lieutenant and his men had been killed in a surprise raid of a small Russian group. No guard had been sent out and the men were caught completely unprepared, their arms lying in the adjoining room.)

Such was the position, and although I am convinced that the outcome of the battle had still been the same if the artillery had been more effective, I hope that these facts help to explain the inefficiency of the artillery in the Seelow Operation.

HEINZ RAUSCH  
Berlin, Germany

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**Rates:** See bottom of contents page.



## New Weapon!

Dear Sir:

Lt. Col. Leon F. Lavoie knows whereof he speaks (ARMOR, Sept.-Oct.). All Marines in Korea recall with appreciation the artillery support rendered by the "Gung-ho" soldiers of the 92nd Red Devils.

But, there still is a little matter that rears its ugly head when the SP-towed controversy develops; i.e. a valuable and much needed gun is put out of action because a fuel line becomes clogged or an oil pump quits working.

One of the best yarns that circulated in Korea during the reign of "Daddy Devil" Lavoie was of an incident involving a soldier of the 92nd. I wish Colonel Lavoie had added this bit of humor to his excellent and informative article "Armored Artillery is the Thing."

On the morning of 24 April 1951 and prior to the furious action that the Colonel describes it is told that a soldier of the 92nd had occupied one of the "four-holers" which was located on the edge of the battalion perimeter. While so disposed he observed several Chinese soldiers moving toward him in the tall grass. Being unarmed and temporarily immobilized, his situation was most delicate. Thinking quickly, he grabbed the nearby roll of toilet tissue and gave it a heave. The CCF, thinking it was a grenade, hit the deck and awaited the detonation. Our hero lost no time, however, in streaking back into the perimeter, shouting the alarm and alerting the local security. It is not recorded just when he managed to get his pants back up.

CAPT. J. M. McLAURIN, USMC  
I-1, 2d 105mm How Btry  
Jackson, Miss.

## An Oversight

Dear Sir:

I enjoyed your article on pages 4-5 of your splendid September-October issue, the "Reconnoitering" column devoted to the trade journals of war, and the comment on the Walter Millis column.



When in 1951 ARMOR ran a story on its winning of an award in the Magazine Show of 1951 sponsored by the American Institute of Graphic Arts, there was little thought that the very issue running the details would itself become a winner in the Magazine Show of 1952. Thus ARMOR's cover for a second time spotlights an award. Although not so intended, with a little stretch of the imagination it is possible to conceive that the spreading of the news has been delegated to that top soldier, our grand American tanker.

We are sorry the Military Police Association was not mentioned. Organized in April 1951, we now have 18,000-plus members. Our publication, *The Military Police Journal*, circulates throughout the world to members of all services. We publish for all who are interested in police and crime prevention work in the Armed Services.

LT. COL. RALPH E. PEARSON  
Editor

*Military Police Journal*

Augusta, Ga.

• *ARMOR hastens to correct an omission which was based on a strict interpretation of publication format. Publications listed were those of formal magazine type. MPJ is a newspaper style publication, but still qualifies as an Army branch journal from an Association.*—ED.

## The Trade Journals

Dear Sir:

I was very interested in "Reconnoitering" in the last issue of ARMOR. The "trade journals of war" are of very great importance to military librarians, too, as we strive to locate essential information for students and instructors.

Unlike the journals of other special groups, there was no index covering military journals, so Air University Library undertook the task of making one in October of 1949. Each member of the reference staff indexes certain magazines, and these are incorporated into the *Air University Periodical Index*, which is an alphabetical index by subject to about forty military journals (including ARMOR). It is published quarterly, cumulated every three years, and is on distribution to all libraries interested in receiving it.

We hope that the *Index* is making needed information more quickly available.

I am inclosing a recent issue for your information.

FLORINE OLTMAN  
Reference Assistant  
Air University Library

Maxwell AFB, Ala.

# The Course of Empire

by Bernard DeVoto

Bernard DeVoto has written the story of the men who explored and, bit by bit, conquered this continent. He shows their impact on the wilderness, but more than that, the impact of the wilderness on them and consequent gradual emergence of a new people in a new world. In doing so, he has been able to relate the almost inevitable procession of human events on this continent to the pattern of land forms and water-courses that have been both the background and the shaping force of our history, and to show that the existence of a continental empire is implicit in the map of North America.

\$6.00



ARMOR has won another award!

Commendable excellence on three counts is the story as ARMOR receives a Certificate of Excellence in the Magazine Show of 1952, sponsored by the American Institute of Graphic Arts.

The Institute inaugurated its annual Magazine Show in 1950. ARMOR has been entered and has won an award in each of the two years of publication under its new name and new style. The January-February issue of 1951 drew the honors in the 1951 Show. (See ARMOR, November-December, 1951, page 4.) This year the award goes to the November-December, 1951 issue.

In this Third Annual Magazine Show, issues of magazines produced in the United States or Canada between July 1, 1951 and June 30, 1952 were

eligible. For purposes of this exhibition, a magazine is considered to be a periodical publication, other than a newspaper, issued at regular intervals at least four times during the calendar year, and with at least 50 per cent of its net circulation paid for either by individual subscription or newsstand sales.

There were 563 entries in this year's show. Basis for the judging centered on six categories of excellence: (1) Layout and Design (2) Illustration and Photography (3) Typography and Lettering (4) Editorial Visual Presentation (5) Cover Design and (6) Printing Craftsmanship.

In his Charge to the Jury, Irving B. Simon, Chairman of the Show, specified that "While editorial content *per se* is outside the scope of your

## MAGAZINE SHOW 1952

# Certificate of Excellence

Awarded by The American Institute of Graphic Arts to

THE UNITED STATES ARMOR ASSOCIATION

for contributing to the publication of an outstanding magazine

ARMOR — NOVEMBER-DECEMBER 1951

THE PRESIDENT OF THE AMERICAN INSTITUTE OF GRAPHIC ARTS

*Stella Domin Payne*

CHAIRMAN OF THE COMMITTEE FOR THE MAGAZINE SHOW 1952

*Irving B. Simon*





At right is the cover of the Jan-Feb issue of 1951, which tags an award while winning one. At left is the spread, pp. 12 and 13, that joins the cover to comprise ARMOR's 1952 Magazine Show award display.



judging, you are enjoined to consider the success with which a magazine has met the problems posed by its editorial approach in the physical execution of the finished product. You are asked to consider the separate features and departments of a magazine, but the distinction of award should reflect the commendable excellence and unity of the publication as a whole."

Once again a distinguished panel of judges comprised the Jury whose responsibility it was to select those magazines reflecting "the highest standards of contemporary magazine design and production." The members included Dr. M. F. Agha, Consulting Art Director; Jess Gorkin, Editor of *Parade*; Richard Ellis, Typographic Director of Curtis Publishing Company; Daniel D. Mich, Editor of *McCall's Magazine*; James Boudreau, Dean of the Art School of Pratt Institute; and F. E. Church, Production Operations Manager of Time, Inc.

In the judging, ARMOR's November-December, 1951 issue produced commendable excellence in three of the six categories considered—Cover Design, Illustration and Photography, and Printing Craftsmanship. The Jury selected the front cover and pages 12 and 13 as exhibit material. It was noted that "while exhibits are limited to a page or two, or a cover, the appraisal and notations of excellence were made on the magazines in their entirety."

The formal showing of the selected entries came with the opening of the Magazine Show 1952 at the new quarters of the American Institute

of Graphic Arts at 13 East 67th Street in New York City, on October 15th. On exhibit were 149 magazines selected from among the 563 entries. One hundred and nine different publications were represented in this selection, with thirty of these appearing more than once in the exhibit. A check of the catalog of the Show indicates that 112 of the selections were printed by letterpress, five by offset and 32 by rotogravure.

Needless to say, we are very much pleased with this reaffirmation of the quality of the graphic presentation of ARMOR. It is an inspiration to note the pair of editorial categories commended for excellence. And once again our thanks are due our printers, Garrett & Massie, Inc., of Richmond, Virginia, for their fine mechanical reproduction of our editorial efforts, which secures the third category of excellence.

The attractive catalog of the Magazine Show 1952 notes some interesting points. For example, Walter Dorwin Teague, President of the Institute, in his message calls attention to the fact that "the balance of aesthetic value has shifted decisively from the advertising to the editorial pages of these publications." Again, the Jury remarked on "a general improvement in layout and design, picture presentation, use of photography and more intelligent use of white space."

The significance of this award will be evident in the treatment accorded it on the front cover and in this column. It serves as the stimulation behind what we feel is one of the most effective covers to appear on ARMOR. And we're happy that the word is being spread by our great American tanker. For after all, this is his magazine.

The Editor





M10 Tank Destroyer.



All Photos U. S. Army

## Mobile Antitank Weapons . . .

by COLONEL WELBORN G. DOLVIN

**M**OBILITY has been a prime consideration in the development of our ground force weapons. Ever since the introduction of the internal combustion engine we have experimented with the vehicular mounting of weapons ranging from the machine gun to the atomic artillery piece.

Recoilless weapons have been no exception. There has been much speculation in the postwar period concerning their use. In the attempt to make them mobile we have seen them mounted on jeeps, tank re-

trievers, weasels and Bren gun carriers. Several years ago an article in another service journal applied them to a light tracked armored infantry carrier labelled the JARP.

By virtue of its size and weight the recoilless rifle is readily adaptable to mounting on a lightly armored highly mobile tracked vehicle such as the Bren gun carrier. Such vehicles could be produced relatively cheaply. Recoilless projectiles are effective against enemy armor. Would a vehicle of this type be the answer to the masses of tanks available to our potential enemies? Are we coming around to a tank destroyer complex once again?

Proponents of this type of vehicle have made certain claims based upon theoretical performance. Assuming that a practical light armored vehicle

mounting a recoilless rifle could be produced, what would be its employment? How would it fit into our present tactical concepts?

There are those who believe that this kind of vehicle is not only the answer to antitank defense, but also that it could perform the missions presently assigned to tanks. They ask what a tank could do that such a vehicle as this could not do. This group visualizes masses of these vehicles being employed on the offense as well as the defense, using hit-and-run tactics. There are others who see them plugging a gap in our present antitank defenses. They feel that these weapons could provide valuable protection for front-line elements in defensive situations. In other words, they would take over one of the missions currently per-

**COLONEL WELBORN G. DOLVIN**, Armor, served with the 756th and 191st Tank Battalions in North Africa and Italy during World War II, and commanded the 89th Tank Battalion in the early months of bitter fighting in Korea. He is now assigned to the Combat Arms Section of Research and Development Division, Office of the Assistant Chief of Staff, G4.

*The tremendous effectiveness of tanks has produced a great amount of study on the subject of how best to combat them. Their tremendous cost has inspired an*





M3 Tank Destroyer.



105mm Recoilless Gun on Bren Gun Carrier.

## *. . . In Armored Warfare*

formed by tanks. We should, therefore, carefully examine this subject to ascertain whether developments along this line would warrant a change in basic tactical concepts, and, if not, where would mounted recoilless weapons fit into our present concepts.

It may be well to go to the early days of World War II to refresh our memories on development of equipment and tactics, similar to that mentioned above. We all remember the early phenomenal success achieved by German armor. Poland and France were quickly overrun. Everyone was seeking an answer to the problem of antitank defense. In general there were two schools of thought on this subject. One group felt that a tank was the best antitank weapon. Another group felt that a system of antitank guns should be given the mission of defeating enemy armor, leaving the tank free to accomplish its primary mission of elimi-

nating the machine gun and enemy personnel. As we well know, the group which advocated the system of antitank guns carried their point with the result that first antitank and later tank destroyer units were organized.

It is interesting to note that the change in name from antitank to tank destroyer was made by General McNair who constantly insisted that antitank units be used more aggressively. He felt that the new name savored more of the offensive. The Tank Destroyer School, at Fort Hood, Texas, under command of Major General A. D. Bruce, insisted on aggressiveness. The motto of the Tank Destroyers was "Seek, Strike and Destroy." Tank Destroyer units trained according to this doctrine saw action in the early days of the North African fighting.

Reports from early actions were unfavorable. General McNair made the following remarks regarding ag-

gressiveness of tank destroyers in this early action:

Since the tank must advance, the tank destroyer need only to maneuver for a favorable position, conceal itself thoroughly and ambush the tank. It is correct to think of the tank destroyer as acting offensively, in that it does not sit passively, on the chance that a tank may come its way, but on the contrary seeks out the tank and places itself where it can attack the tank effectively. However, the destroyer would be foolish indeed to act offensively in the same manner as the tank, for such tactics would place the destroyer at a disadvantage, and would sacrifice unnecessarily the advantages which the destroyer has by the very nature of things. . . . The trouble in North Africa was that the tank destroyers, instead of firing from concealed positions, maneuvered too freely during combat. Instead

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*equal amount of effort to find an effective and less expensive substitute for them. We must not let an antitank-cost complex undermine our sound doctrine.*

---



of being aggressive in their reconnaissance and preparatory dispositions, they were aggressive in the face of the tanks themselves, and suffered severe casualties because of their virtual lack of armor.\*

As a result of this early employment, Allied Forces Headquarters, in a memorandum, restated the doctrine of tank destroyer employment, putting emphasis on rapid reconnaissance, thorough concealment in prepared positions, and avoidance of premature fire. This new concept of tank destroyer tactics with minor changes was followed during defensive phases for the remainder of the war. In offensive operations it was

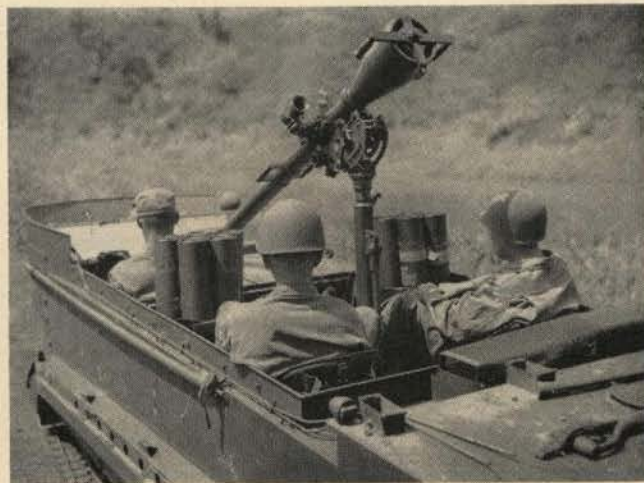
weapons. In addition, it was determined that the Russians had tanks in substantial quantities which had demonstrated their ability during the war. Since any decision on our part to match Russian armor on a quantitative basis involved high productive capacity and very high unit costs, it was natural that all concerned should start looking for a cheap way to defeat the large masses of Russian armor. It is also natural that developments along this line would have a great deal of popular appeal. In fact, they have so much appeal that the hard-learned lessons of World War II may be forgotten, especially by those who have not had extensive

the enemy. In accomplishing this mission, as part of the infantry-tank team, tanks eliminate those weapons and personnel which attempt to prevent the infantry from advancing. They use their great armor-protected firepower, mobility and shock effect to the maximum. During the attack and after the objective has been taken, tanks use their cannon to eliminate enemy armor which attempts to prevent the accomplishment of the mission of the team. In the defense, tanks provide antitank protection, reinforce the fires of the front-line battalions and participate in counterattacks.

Divisional and Corps tank units



105mm recoilless gun mounted on a jeep. Limitations are a shorter range than tanks, no armor, and wheels, not tracks.



75mm recoilless gun mounted on a Weasel. Limitations here are the open top and special purpose nature of the vehicle.

common practice for the tank destroyers, utilizing their bigger guns, to overwatch the tanks' advance.

Following World War II it was decided that the proper solution to the tank-tank destroyer problem was to place a gun on the tank capable of defeating enemy armor and have the tank perform the mission formerly assigned to tank destroyers. In other words, it was decided that, considering both offensive and defensive combat, the tank was in fact the best antitank gun.

During the period following World War II economic conditions resulted in more than doubling the cost of armored equipment as well as other

combat experience.

Comparison of the probable characteristics of a light vehicle mounting a recoilless gun with the tank destroyers of World War II fails to reveal any new capabilities which would permit them to seek, strike and destroy enemy armor. Such vehicles maneuvering in the open would be easily destroyed, just as tank destroyers were during the early days of World War II. Thus the proper employment for this type of weapon still is to engage enemy armor from well-prepared concealed positions.

If such new vehicles were to replace tanks they must be capable of performing the missions assigned to tanks. In offensive operations this mission is to close with and destroy

give depth to the antitank defenses and provide a strong armored element for counterattacks launched at that level. In delaying actions tanks utilize their firepower to inflict the maximum damage on the enemy and to force him to deploy prematurely. This must be done at relatively long ranges in order to withdraw to another position without becoming heavily engaged.

In order to perform these various functions the tank must possess not only effective antitank capabilities at relatively long ranges but also great personnel-killing power. It must have enough protection to permit it to live on the battlefield and to allow it to close to within effective range of the enemy without being de-

\*From U. S. Army in World War II, the Army Ground Forces.



stroyed. It must carry sufficient ammunition and gasoline to give it sustained action. Likewise it must be mechanically reliable. It must be capable of delivering accurate small-arms and cannon fire over the heads of, and close to, friendly infantry.

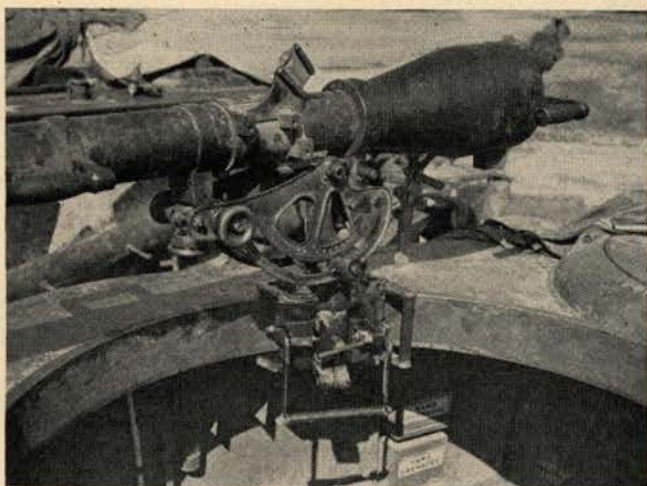
An analysis of the theoretical military characteristics of light antitank vehicles reveals that they possess the capability of performing but one of the missions presently assigned to tanks. These vehicles would greatly increase the antitank protection of front-line elements. In this role these weapons could fire from carefully selected and concealed positions against enemy armor moving in the

against enemy armor. In the attack they would not only be exposing themselves to enemy armor, but would also be unable to eliminate those weapons and personnel which attempt to keep the infantry from advancing. Finally, the quantity of ammunition they would be able to carry would be sufficient for only a limited engagement. They would not have the ability to continue the attack with the infantry until it was successfully concluded.

Aside from the characteristics of the vehicles, the concept of hit-and-run tactics is open to question. Most experienced commanders agree that when the enemy launches his attack,

or to make a radical change in position, will probably be unsatisfactory. Aside from the psychological reasons, it is doubtful if enemy fire would permit the use of these tactics. The enemy, like our own forces, in the attack will employ his artillery to neutralize, insofar as possible, the personnel occupying the position he is attacking. In addition, he will attempt to isolate the area to deny the opposing forces the opportunity either to reinforce or shift forces.

In summary, such weapons as light vehicles mounting recoilless rifles would be a valuable and most important development. However, they should be properly integrated into



Experimentation in Korea has resulted in this mounting of a 75mm recoilless rifle on an M32 tank retriever turret.



In Korea these U. S. infantrymen fire a 75mm recoilless rifle at Red troops. It is pedestal-mounted on a vehicle.

open. They would have sufficient range to engage enemy armor before it overran the friendly position. Those vehicles held in reserve could move quickly to previously selected positions once the direction of the enemy's main attack had been determined. However, they would not be sufficiently armored or armed to permit them to participate in counterattacks. We can assume that any enemy attack which penetrates our defensive positions will be strong in armor. Therefore, the counterattacking force must be strong in armor-defeating capabilities, as well as armor and staying power, *viz.*—tanks.

Light antitank vehicles, like the tank destroyers of World War II, could not maneuver in the open

use of the principle of fire and fall back may prove disastrous. Rather, every effort must be exerted to keep everything in position. The obvious reason for this is found in human nature itself. When occupying a position subjected to enemy attack employing modern weapons, the natural reaction of a normal human being is to get out. This normal reaction must be overcome by proper indoctrination, guidance and leadership. However, any movement to the rear tends to be contagious. Individuals can easily imagine that the orders to withdraw have been issued and that they failed to get the word. Therefore, any plan for employment of a weapon, which calls for firing a few shots, then pulling back for resupply

our overall antitank system. They would do much to strengthen our front-line antitank defenses. They would be capable of taking over one defensive mission now assigned to tanks. However, they would not have the necessary armament, armor protection or sustaining action to perform the offensive tank mission.

We must not forget the lessons of history. Nothing new has been developed which warrants our returning to the early concept of the tank destroyer. We should continue to improve that most versatile weapon—the tank—to insure that the superior quality and versatility of our tanks will overcome any advantage due to a possible superiority in numbers enjoyed by our potential enemies.



# A SOLDIER'S READING

by BEATRICE AYER PATTON



*Our great mobile commander  
had a rare sense of history*

**I**T began with the classics, for the Pattons felt that life was too short to get one's education unless one started early, and the family loved to read aloud. By the time the future general had reached the age of eight, he had heard and acted out the *Iliad*, the *Odyssey*, some of Shakespeare's historical plays, and such books of adventure as *Scottish Chiefs*, Conan Doyle's *Sir Nigel*, *The White Company*, the *Memoirs and Adventures of Brigadier Gerard*, *The Boys' King Arthur*, and the complete works of G. A. Henty.

---

BEATRICE AYER PATTON is author of *Legendes Hawaïennes* (Paris, 1932) and *Blood of the Shark* (Honolulu, 1936). She edited *War As I Knew It*, General Patton's personal memoirs, published in 1947.

As a cadet he singled out the great commanders of history for study, and I have his little notebook filled with military maxims, some signed J. C., some Nap., and some simply G. Sources were his specialty, and as a bride I remember his handing me a copy of von Treitschke saying: "Try and make me a workable translation of this. That book of von Bernhardt's, *Germany and the Next War*, is nothing but a digest of this one. I hate digests." Unfortunately, my German was not of that caliber, and he had to make do until a proper translation was published several years later. He was, however, one of the first Americans to own that translation, as later he owned translations of Marx, Lenin and the first edition of *Mein Kampf*; believing that one can only under-

stand Man through his own works and not from what others think he thinks. No matter where we moved there was never enough room for the books. We were indeed lucky that an Army officer's professional library is transported free.

He made notes on all the important books he read, both in the books themselves and on reference cards, and he was as deeply interested in some of the unsuccessful campaigns, trying to ferret out the secret of their unsuccess, as he was in the successful ones. I have one entire book of notes on the Gallipoli campaign. He was especially interested in landing operations, expecting to make them himself someday.

Our library holds many works on horsemanship, fox hunting, polo and



sailing, all sports with a spice of danger to keep a soldier on his toes in time of peace.

He was an intensive student of the Civil War, and one of his regrets was that his favorite military biography of that period was by a foreigner . . . Henderson's *Stonewall Jackson*. Imagine his delight when Freeman's *Lee* began to appear. He bought and read it one volume at a time, and when I showed it to the author, crammed with my husband's notes and comments, he smiled: "He REALLY read it, bless his heart." His memory was phenomenal and he could quote entire pages from such widely different sources as the Book of Common Prayer, Caesar's *Commentaries*, and Kipling's and Macaulay's poems. On the voyage to Africa in 1942 he read the Koran, the better to understand the Moroccans, and during the Sicilian campaign he bought and read every book he could find on the history of that island, sending them home to me when he had finished them.

During the campaigns of '44 and '45 he carried with him a Bible, Prayer Book, Caesar's *Commentaries* and a complete set of Kipling—for relaxation. A minister who interviewed him during that winter remarked that when he saw a Bible on his table he thought it had been put there to impress the clergy, but had to admit later that the general was better ac-

quainted with what lay between the covers than the minister himself.

Most of all, he was interested in the practical application of his studies to the actual terrain, and as far back as 1913, during a tour at the French Cavalry School, we personally reconnoitered the Normandy bocage country, using only the watershed roads used in William the Conqueror's time, passable in any weather. When he entered the war, four years later, he fought in eastern France, but in 1944 his memory held good. People have asked me how he "guessed" so luckily.

"Terrain is sometimes responsible for the final windup of a campaign, as in the life of Hannibal," he wrote. To him it was not a coincidence that the final German defeat in Africa was near the field of Zama. His letter, "I entered Trier by the same gate Labienus used and I could almost smell the sweat and dust of the marching legions," is an example of how dramatically he could link the present with the past. As he had acted out the death of Ajax on the old home ranch, so he and our family acted out Bull Run, Chancellorsville, and Gettysburg. I have represented everything in those battles from the artillery horses at Sudleigh's Ford to Lieutenant Cushing, Army of the Potomac, at the battle of Gettysburg. That was a battle long to be remembered. At the end of the third day, as the girls

jumped over the stone wall into Harper's woods, Ruth Ellen fell wounded, took a pencil and paper from her pocket and wrote her dying message. (The original, by Colonel Tazewell Patton, C.S.A., is in the Richmond Museum.) I heard a sort of groan behind me. As Lieutenant Cushing, firing my last shot from my last gun, I had been too busy to notice a sight-seeing bus drawn up and watching the tragedy of Pickett's charge.

If I have digressed from my subject, reading, it is to show the results of reading. First he studied the battles; then, when possible, played them out on the ground in a way that no one who ever participated in the game can ever forget.

From his reading of history he believed that no defensive action is ever truly successful. He once asked me to look up a successful defensive action . . . any successful one. I found three, but they were all Pyrrhic victories. History seasoned with imagination and applied to the problem in hand was his hobby and he deplored the fact that it is so little taught in our schools, for he felt that the study of man is Man, and that the present is built upon the past.

As I read the books coming out of this last war, I know those that he would choose; authoritative biographies and personal memoirs of the writer, whether he be friend or enemy. No digests!

## ★ MRS. PATTON'S ANNOTATED LIST OF GENERAL PATTON'S FAVORITE BOOKS ★

*Maxims of Frederick the Great.*

*Maxims of Napoleon*, and all the authoritative military biographies of Napoleon, such as those by Bourienne and Sloane.

*Commentaries*, Julius Caesar.

Treatises by von Treitschke, von Clausewitz, von Schlieffen, von Seeckt, Jomini, and other Napoleonic writers. Memoirs of Baron de Marbot, and de Fezansec, a colonel under Napoleon: We were translating the latter when he went to war in 1942.

*Fifteen Decisive Battles of the World*, Creasy.

*Charles XII of Sweden*, Klingspor.

*Decline and Fall of the Roman Empire*, Gibbon.

*Strategicon*, Marcus and Spaulding.

*The Prince*, Machiavelli.

*The Crowd*, Le Bon.

*Art of War in the Middle Ages*, Oman, and other books by him.

*The Influence of Sea Power Upon History*, Mahan, and other books by him. (*The Trilogy*.)

*Stonewall Jackson*, Henderson.

*Memoirs of U. S. Grant*, and those of McClellan.

Battles and Leaders of the Civil War. R. E. Lee and Lee's Lieutenants, Freeman.

*Years of Victory and Years of Endurance*, Arthur Bryant. *Gallipoli*, Hamilton.

Thucydides' *Military History of Greece*.

Memoirs of Ludendorff, von Hindenburg, and Foch.

*Ghengis Khan, Alexander* and other biographies, Harold Lamb.

*Alexander*, Weigall.

*The Home Book of Verse*, in which he loved the heroic poems.

Anything by Winston Churchill.

Kipling, complete.

Anything by Liddell Hart, with whom he often loved to differ.

Anything by J. F. C. Fuller, especially *Generals, Their Diseases and Cures*. He was so delighted with this that he sent a copy to his superior, a major general. It was never acknowledged. Later he gave twelve copies to friends, colonels only, remarking that prevention is better than cure.





*You are a Lieutenant, Armor. Your orders to the Far East Command have already appeared in the Army-Navy-Air Force Journal. Your stay in Japan will be brief. You will command a tank platoon in Korea! Just what will you want to know . . . ?*

## Tanks in Positional Warfare

by **LIEUTENANT COLONEL CHARLES W. WALSON**

**W**ELCOME to the battalion, lieutenant. Sit down and let's chat awhile. I see that you have been in Korea for all of five days. How do you like it?

Well, you will get used to it. Like everything else you will find that it isn't as bad as you thought it would be.

I see from your records that you have had three months experience in a tank battalion in the ZI. What training were you doing?

Well, it's too bad that you had that club officer detail and the assistant adjutant job because that won't help you much here. That tour on maneuvers will help you and the week on the range will be invaluable. I hope that you used every opportunity you had to become familiar with tanks and tankers because you certainly can use that experience now. I am glad that you took the course at Knox. It will help you, but not as much as your practical experience.

Before I start to tell you about the battalion and what it has done in the war, I want to brief you on one of the principal duties that you will have here in Korea. We call it "bunk-

er busting." It is the job of furnishing tank support to infantry on the main line of resistance and sometimes on the outpost line too. It is a job requiring a lot of attention to detail, a lot of common sense and a lot of guts and perseverance. It is not as thrilling as our raid and attack missions, but it is one of our most important jobs at present. You listen to me and take notes and you will do a good job and save men's lives.

I am afraid that you didn't get much of this poop at Knox. Don't forget what you learned at Knox. The books have got the right stuff. It's just that this job is specialized. I have a hunch that even our people

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**LIEUTENANT COLONEL CHARLES W. WALSON**, Armor, is commanding officer of the 245th Tank Battalion, 45th Infantry Division, in Korea.



in Europe could stand some of this training for they might become involved in this so-called positional warfare also.

Let's start at the beginning: you receive a warning order that you are to take your platoon up to firing positions on the line. Right away you should alert your platoon so that they can finish up any heavy maintenance projects and begin their preparations. After that you start off on your reconnaissance. Report in to the CP of the unit that you are relieving and, if possible, get a guide to the positions. Study the situation map before you start out and find out the situation in that sector from the people in the CP.

On your way to the firing positions, find out what areas are exposed to enemy observation and fire and keep your head down because those people are pretty accurate. Look for turn-arounds, alternate routes, and the location of other unit CP's and installations on your trip. Remember that you may have to fight over that same route so look for blocking positions and counterattack routes too. Tick off the mileages and don't be afraid to make notes. This country looks a lot different at night and you don't get lost often without paying for it.

OK, let's say that you are approaching the position now. You will find that it is a pretty lonely looking spot. Not many people will be wandering around and it may be pretty badly chewed up. You may have to do a lot of climbing to get there. We put tanks in the damndest spots here.

There's no such thing as a perfect position, so you want to start seeing what they've got and then start finding out what you will have to do to improve it. First, stay behind the hill and see how the tankers are living. Check the bunkers for their condition and size. I'll tell you more about bunkers later. Look around the area and see how well it is policed. If there is any trash, ammunition or brass laying around, you've got a job waiting for you because we expect the same standards of police there as we do here. Plan to bury the trash and send the brass back with the supply truck. Check to see what the position has in the way of ammunition bunkers. Your extra ammunition has to be dug in if you want to have

some to fire when things get hot. Generally, there is a small cache of gasoline at each position for the auxiliary generator and Coleman stoves. It should be dug in. Everything has to be dug in. Even the tank ready position behind the hill should be protected.

Look over the latrine and urinal situation. Sanitation is doubly important there and nothing but an airtight latrine is satisfactory.

Now let's check the workshop. See what the approaches to the firing position are like. They are mighty important if you want to pull up or pull out in a hurry. Check the slope, the drainage, and see if the route is covered or camouflaged. The firing position should be well dug in and camouflaged too. It's only sporting to expect those people to shoot back so you might as well present the smallest and best protected target possible. You can overdo the sporting angle, you know.

The tankers at the position should have two aiming stakes set up as well as markers so that they can fire at night. If you don't know the two aiming stake methods for night firing, look it up in FM 17-12. It will really help you. Study the terrain in front of the position and learn what the targets are. Get a copy of the range card. It will help you get started on your own.

Look around for alternate firing positions. You may be able to develop

some new ones. If you can find alternate positions you can keep the Reds off balance on your daily shoots.

All right, let's come down from that firing position and begin looking around the area where you are going to operate. First visit the local CP's and OP's. Those infantry, artillery and mortar boys on the spot can really give you a lot of information on what is in front of your position. Be sure to tie in wire and radio communications with them and find out what their final protective fires are so that you can tie in with them.

It's a good idea to have your own OP, and a commo trench or tunnel to the OP makes it that much better.

Take your time and really get acquainted with your future home, and after you get back to your platoon, make sure that all of your tank commanders spend at least a day and a night on the position so that they are well oriented too.

Back at your platoon again. Get systematic. Prepare a list of what you will need on your position. Here are a few things that you may want right at the start: sandbags, extra communications equipment, rations, water, extra pioneer tools, stoves (heating and cooking), sprayers, bug bombs and DDT for insects, sleeping gear, warm clothing, toilet articles, candles and flashlights. If you can get your hands on a 20 power scope take it along too. Try to arrange a swap for as much equipment on position as you can,



U.S. Army

Not the ideal employment of tanks, but a part of their versatility in Korea.



but remember that you don't swap tanks. The tanks should come back. They need a rest too.

You are just about ready to move out now. Calculate the time it will take to complete the relief, taking into consideration the fact that it may be made during the hours of darkness. Inspect your tanks and equipment before moving out. You can save a lot of unnecessary grief if you do.

Now, let's assume that your platoon is in position. It may be spread out over a considerable distance, but remember that you have to control it. Work out a schedule for each day and keep it. Remember that busy men don't have a lot of time to sit and brood.

Here are some things that should be in your schedule. First, the guard. There should be two men on or near each tank at all times. They act as guards in the event of fire or enemy action and also prevent any pilfering. They don't have to just sit. There is plenty of daily maintenance that needs to be done and you need someone listening to the radio 24 hours a day. You may use one of these men as an observer. Keep him looking for targets. After a while, he will know his sector so well that he can post you on the morning habits of that Red FO across the valley.

Remember that you have a 24-hour-a-day job. Run a sleeping schedule for your men too. Don't worry about an 8 hour day, however. Just remember those days back home when you put in a good day's work and then tomcatted around all night. These birds have more stamina than the personnel people give them credit for.

Every day have a regular police call and inspection. I know it sounds odd, but you have to do it, and, mister, it will really pay off in the results you get. You schedule your sanitation work too if you want a healthy platoon. Use your aid man and see that the miticide spray, rat poison and other sanitary precautions are used regularly.

Next you'll want to know about the chow situation. Well, in some positions your company will get you three hot meals a day, in others two, in others only one. We damn well will get you at least one a day. If you are on C rations the rest of the time, schedule their preparation and make sure that your people eat them

all. If you are getting hot meals, be sure to have some boiling water ready when the chow truck reaches you. It will have mess kits on it, but the long dusty ride will make them something less than sanitary and a boiling water rinse should save you future grief.

Now let's talk about your number one scheduled job. That is the job of digging. Set a goal for each day. Three feet of commo trench a day soon adds up to a respectable length. Improve your bunkers, ammo storage, firing position, ready position, OP and commo trenches. Remember what I said before. There is no such thing as a perfect position. Keep your men busy on camouflage too. Don't advertise your position.

Schedule your own activities. Along with your inspections and the shooting be sure to visit the local OP's and CP's and get zeroed in on friendly and enemy information. Find out the patrol plans and tie them in with your fires.

Now for the shooting. I'm going to get technical on you again. I told you about the range cards before. Now when you start your own firing, work out your own range cards. Be sure to assign each of your tanks a sector of fire and observation. Use those range cards at night and in fogs. You will get good results. Time your fires so that they do not follow a pattern. Catch the Commies when they don't expect you. Keep your RPM's at a minimum when moving up. Try to surprise the Reds.

You will find that you will be firing at great ranges. Some will require OP control. Keep each tank within its assigned sector and shoot at enemy positions in this priority: direct fire weapons, OP's, bunkers, and commo trenches. Use HE delay and APC against bunkers. Use white phosphorus in apertures. Chew up those enemy commo trenches. It keeps them busy and nervous. Tie in with the local observers. You can really work out some fancy plays with them. Keep checking your range card data and have it up to date. Try to shoot when the sun is at your back. You can observe better and he can observe less.

Keep buttoned up in your firing position. The tank commander can observe if he cracks the turret hatch, and for Pete's sake keep your pistol

port closed. We've had men wounded by fragments coming through the pistol port.

Firing right after an air strike is effective. You can complete the job and you probably won't get counter fire.

Now a few more tips. Keep your men off the skyline. The same thing applies to your resupply vehicles. Make them come up at night if they have to expose themselves. It will save vehicles and men and keep the enemy uninformed.

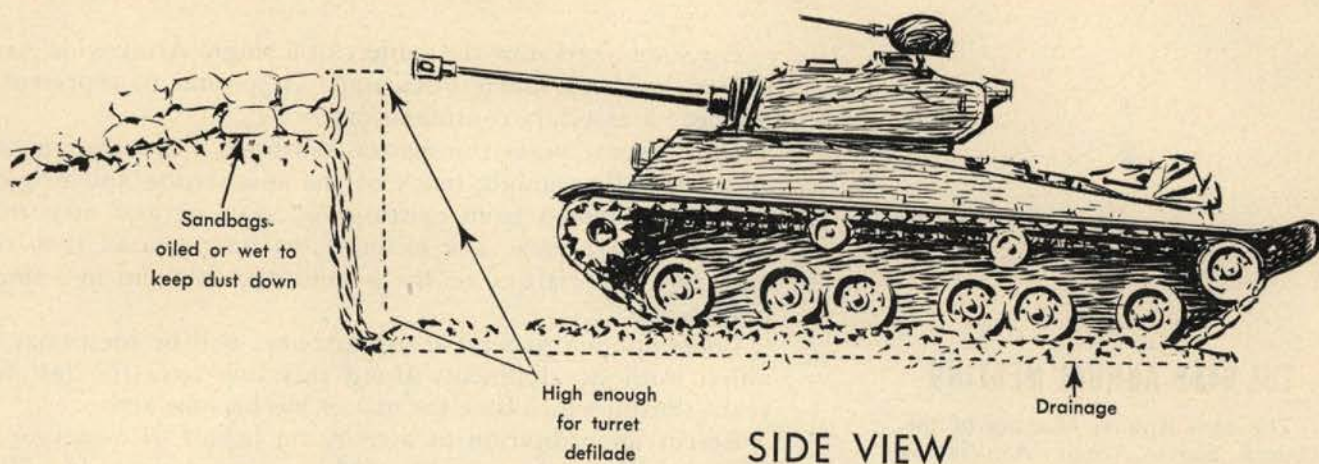
After you fire and pull back to your ready position, wait in your tank a while before dashing to your bunker. The Reds have a way of dropping a few rounds on your position when they figure that you are dismounting. Of course, if you want to get really fancy, you can dig a communications trench from your ready position to your bunker and use your escape hatch to get in and out.

Be sure to tell the local citizens when you are going to fire so that they can lie low. Some of the doughs think that tanks draw fire. Our experience has been that tanks don't draw fire, but that dismounted people, skylining themselves near tank positions definitely do draw fire. You will have some pretty warm discussions on that subject and you might as well get yourself prepared. Drop around and see the S2 tomorrow and look over his charts and analysis of incoming rounds. He should give you plenty of ammunition for your arguments.

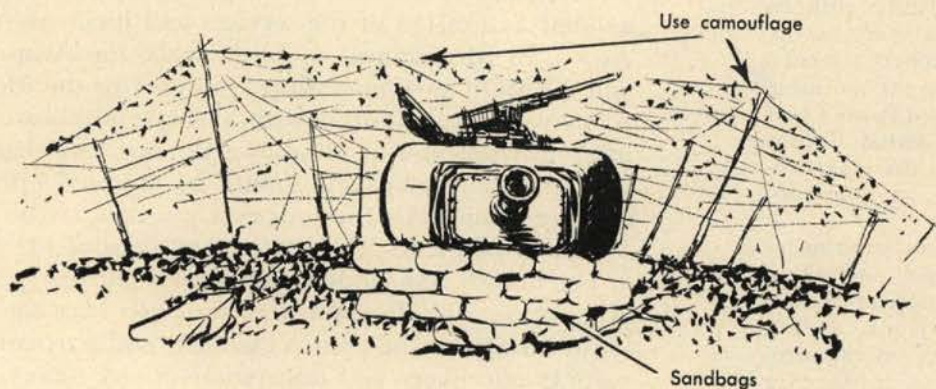
Now about those bunkers. Some of the mojos build so-called bunkers that a healthy sneeze would blow over. We don't stand for that type in this battalion. What we build for is protection from enemy mortars, not shelter from the rain and snow. Make your men dig down for this protection, not build up. Fill in the open sides by building a solid sandbag wall at least two sandbags thick. Before you cap the bunker put up good solid vertical supports. Don't rely upon the earth or your sandbag wall to hold the cap up. When it rains here, it really rains and you will find that your walls give way and your bunker will collapse. Men have been killed by collapsing bunkers. Make sure that you have vertical supports and cross members at least a foot in diameter to keep your roof off you.



## TANK POSITIONS



SIDE VIEW



FRONT VIEW

Now put on your cap. Use logs that are long enough to extend well over the sides of the bunker and place them side by side solidly over your hootchie. Use good sized logs, at least an inch in diameter for every foot of span, and use two layers if you can get them. Next put on your tar paper. Give it a good two feet of overhang. That will keep your walls better protected from the rain. Then start putting on your sandbags. Use at least three layers, and then put on another layer of tar paper before you put on your final layer of bags. Put rock on the very top; it will help detonate any hits on top.

Ditch your bunker on the outside and on the inside too. Revet the walls of your hootchie to keep them from crumbling in on you. Your men will be able to improvise bunks inside that will be pretty comfortable.

Use clean, dry sand for flooring. Wooden floors invite the rats to nest and also induce a "sweep it under the carpet" attitude.

Be sure to have a baffle in front of your bunker and an overhang over the entrance. Don't allow your people to have fancy windows; the only openings you should have should be the entrance and a hole for your stove chimney.

Use covered metal boxes for stowing extra food, coffee and sugar. A fuse box is good for this purpose.

Remember that the bunker must be kept neat. Those men are living close together cooking, eating, sleeping, and washing in a small area. If you don't keep an eye on it, the place will be a hog wallow. Be conscientious about sanitation. Keep the place sprayed and powdered and keep your rat poison and traps in good

condition. Health is important here.

Now one last thing. You may feel awfully lonely up there and think that you are fighting the whole war by yourself, but there are a lot of people interested in what you are doing. Keep us informed. Report how much you have fired, what you have hit, your incoming rounds, and what supplies you need. Keep us informed and we will try to help you.

I have been in a lot of firing positions, a lot of times and believe me I can tell in damn short order how efficient each of my officers and non-commissioned officers is by seeing how he handles his job up there. If you plan ahead, schedule your activities, keep your men busy on constructive work and fire often and aggressively, you will soon make a name for yourself in this outfit—and, I'm sure, in any outfit.



### THE 64TH ANNUAL MEETING

The 64th Annual Meeting of the United States Armor Association will be held at The Armored Center, Fort Knox, Kentucky, on Friday, January 30, 1953.

Last year the organization of mobile warfare made history with its biggest meeting in 66 years of operation. Over 400 members attended the business meeting in the morning, while 2000 officers heard Army Chief of Staff General J. Lawton Collins in a major address on the tank program, feature of the day-long program.

The upswing in Association membership during the past year, along with the sizable rotation of Armor personnel into Fort Knox, assures many new members of an opportunity to take part in this outstanding event of the year in the field of mobile warfare.

The central location of the site, and a date that ties in with a week end should make possible a substantial attendance of Armor personnel. Now is the moment to check your membership in the Armor Association and make your plans to be at Fort Knox with the big group of professionals in your special field, among whom you will find the tops in the game. Regular, Reservist and Guardsman will assemble. A full program with a distinguished guest speaker will be presented.

For some years now the subject of a single Army-wide Association has been under discussion. A journal to represent it has been a corollary consideration.

Until recent years the matter has been a speculative one. And naturally enough, much of the speculation and original thinking stemmed from existing Associations and magazines in the military area. For example, as long ago as 1940 this magazine editorialized on the possibilities inherent in a single publication.

Contemporary ground arms personnel will be somewhat familiar with developments along this line over the last five years, during which time the matter has become active.

Recent intensification of activity on behalf of a merger of several military Associations and their magazines, including our own, calls for a reexamination of the subject and a further expression of views.

This Association and its magazine wholeheartedly endorse general unification of the services and inner unification of the Army. In furtherance of those ideals, the Armor Association and ARMOR give unqualified support to the idea of a single Army-wide organization with a single publication as its primary instrumentality. But—we do not feel that such an organization and magazine should be imposed upon one of the existing branch Associations and journals, or be composed of a number of them! There are many reasons for our belief.

The branch Association and branch journal sprang up many years ago. The fundamental purpose was the professional improvement of the branch member, and particularly the company grade officer and noncommissioned officer. The history of service of each of our branch journals in terms of the careers of a large segment of the respective branch members is demonstrable. The purpose is as valid today as it was sixty-seven years ago when this Association established the first of the ground arms organizations and magazines.

Through the years our respective branches, while drawing closer together and exercising increasing cooperation and teamwork, yet have become increasingly technical within themselves. Individually, the three major combat arms, for example, have become highly complex branches of the service, thus demanding increased exposition rather than any form of simplification, subordination or generalization. This is particularly true of Armor.

A single Army-wide organization should, we feel, be Army-wide. There are many arms and services in the Army, and certainly an amalgamation which bases its reason on the ideal of unification, sacrifices that ideal by advocating a limited union. All proposals made in recent years have been a curious mixture of idealism and commercial expediency, including certain of the existing organizations and magazines while excluding others. Rather than promoting inner unification, this has fostered differences, and is further evidence that a single Army-wide organization must originate elsewhere than in existing Associations.



# ... AND AN ARMY-WIDE MAGAZINE

Any union of existing military branch Associations and magazines which seeks the liquidation of all except one and the assumption by that one of the responsibilities for those liquidated is inherently wrong. Such matters as branch size, branch *esprit*, business size, editorial balance, administrative control and financial weight are practical considerations which work at odds with idealistic purpose. Unification presupposes equality, which can hardly exist on such a base. The perpetuation of the executive management of the one following the elimination of the executive managements of the others, in turn would tend to perpetuate conditioned thinking and habitual operation on the part of the heir, despite the best of intentions to the contrary, and despite varied representation on a control body which, by its nature—considering the fact that its members are serving in an extracurricular rather than in a primary full-time capacity—operates in a somewhat detached manner.

All of this poses a question. If the Armor Association and ARMOR oppose a merger of several of the existing branch Associations and magazines, how can this stand be reconciled with support of a single Army-wide Association and magazine?

It seems to us that the appropriate meeting ground for the type of organization proposed already exists and needs only to be explored in order to find the ideal carrying agent for an Army Association. It is the area where such organizations as Fort Leavenworth's *Military Review* and the American Military Affairs Institute's *Military Affairs* operate.

It is here that the framework for an Army-wide Association and journal may best be found, to be established with some appropriate publication or organization which might be interested. Here the general purpose of such an organization could be pursued, supported by *all* existing media, offending none by virtue of omission. Here the more general military fare could be offered by a magazine covering the level above the respective branch details. Here is the level for unification, the place to make such an ideal practical and workable.

ARMOR would be interested in having the views of all service journals and their Associations on this thought, especially Signal, Engineer, Ordnance, Quartermaster, Chemical, Transportation, Surgeon and Military Police. They hold equal status with the combat arms in any consideration of an Army-wide Association.

It is not enough to support an ideal. Unification must have the accompaniment of all contributing factors of this situation to be in context.

The Armor Association and ARMOR stand ready to support an Army-wide organization to the limit; but it must be one which is all-embracing in purpose as well as in name; one which does not seek to eliminate existing branch Associations and magazines, whose contribution to National Defense—to the branches, the Army, the nation—has long been established, and is well confirmed.

## OFFICER CANDIDATE SCHOOL

The Armor Officer Candidate School at Fort Knox is a proving ground for enlisted personnel who desire, and have the potential, to become officers. As a source of opportunity in the Armor arm it is an element of branch appeal which will contribute to the original consideration of many men to select Armor as the arm in which they want to enlist and serve.

The level of operation of the Armor OCS is around 1100 students enrolled in 11 concurrent and overlapping classes.

An important thing, it seems to ARMOR, is that all quotas for Armor OCS be filled from among Armor's branch members. Service in Armor prior to attending OCS is in itself a major qualification. Armor enlisted service is a proving ground for OCS. Selection from within the branch provides a strong and continuing incentive among the enlisted personnel of our arm to work for the OCS goal. The limited quotas that do exist should not be further pinched by commanders filling them with personnel of other branches such as Quartermaster, Engineer or Signal, unless those personnel had served in *Armored* Quartermaster, Engineer or Signal assignments.

Armor slots should go to Armor if we are to attract the personnel base that will insure the future of Armor.



*Control is the keynote of tank operations*

*One battalion uses this method of*

# Tank Identification for Training

by **LIEUTENANT COLONEL VICTOR B. FOX**

**S**OON after the return of the 70th Tank Battalion from Korea to the Island of Hokkaido in Japan as part of the Security Force of the 1st Cavalry Division, it became apparent that some of the methods used in combat for tank identification could not be the solution here. The Hokkaido training area occupied by the 70th Tank Battalion for the most part is fairly even rolling country with very few OP's and vantage points.

OP's are not so necessary when training your small units such as a section or platoon, where short distances and limited objectives are used, but, in the training of units of company and battalion size, the need for OP's is imperative if the proper



U.S. Army  
**LIEUTENANT COLONEL VICTOR B. FOX**, Armor, is commanding officer of the 79th Tank Battalion, First Cavalry Division, now a part of the security forces in Japan.

control of each individual platoon and company is to be maintained. Therefore we have had to resort to the use of light aircraft and man-made towers for OP's. Then the problem of tank identification from the air and long distances became the problem.

The foregoing explanation will indicate that it is quite necessary in training and combat to be able to identify each individual tank as to platoon and company so as to be sure they are in the right position and carrying out their part of the attack or problem.

Many systems of identification have been advanced from time to time, but we believe the system we are using is simple and foolproof. It

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Companies are distinguished by the use of color, with Red for A Company, Blue for B, Yellow for C and Green for H&S.



First Platoon, First Tank.



Second Platoon, First Tank.



Third Platoon, First Tank.



provides excellent training for all tank crew personnel and officers in the vital subject of being in the right position at the right time.

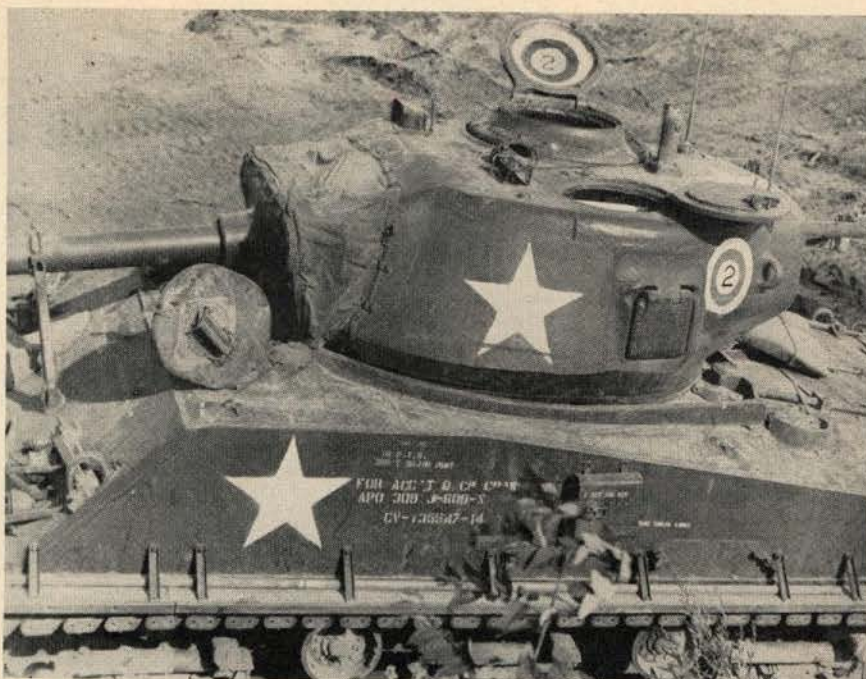
Especially have we tried to keep our marking system simple so all men can easily understand it and note its feasibility of usage. Further, by making the system simple, it can be passed on rapidly to the infantry in tank-infantry team tactics, problems, and in combat. They can readily identify the tanks of the platoon they are to work with.

The identifying designs are painted on each side of the tank turret. The basis is a 16-inch diameter circle. Colors and geometric designs are used for distinction.

These designs and colors can be seen at long distances and can be picked up with field glasses from Liaison Aircraft, etc., and are invaluable to the company commander, the platoon leader and the battalion commander in controlling their units.

They know immediately, by sight, which tank is straggling or is out of position, and can change the situation with radio contact.

For better control from the air, loaders' hatches and tank commanders' hatches are painted on the inside with the same design that appears on the side of the turret, and for the designation of a section within a platoon. Tank commander's hatch painted indicates a 1st Section Tank in the platoon. Loader's hatch painted indicates a 2d Section Tank.



U.S. Army

An M4 tank of the 70th Tank Battalion painted with identification markings on turret and tank commander's hatch labels it as a first platoon tank by virtue of the circle, and as tank Number 2 because of the number within the circle. It is tagged as a 1st Section tank in the fact that the hatch marking appears in the tank commander's hatch. The loader's hatch would mean the 2nd Section.

In close proximity to the enemy, the hatches can be closed or the markings covered to prevent identification by the enemy.

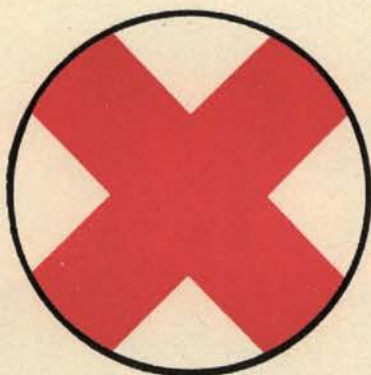
This system of identification has been tested by this battalion both in training and combined training. It has facilitated control on RCT problems and BCT tests. Not only does

it make control easier for the tank unit commander, but it also aids the infantry unit commander in rapid identification of the specific tanks which are to support him. Dust and mud rapidly obscure company numbers on the hull, but the identification markings on the turret are always clear.

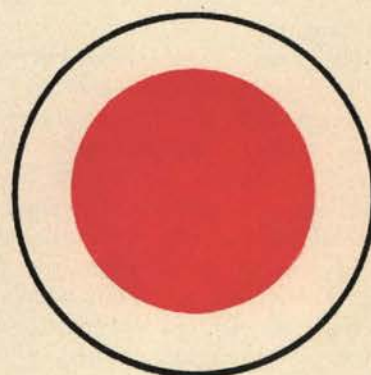
All color markings appear on a common white background for all units and all numbers appear as black against the white.



Fourth Platoon, First Tank.



Executive Officer (no number).



Commanding Officer (no number).



# 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.

*In large-scale mobile operations, nature and the enemy contribute a variety of obstructions to impede the advance. The task of overcoming obstacles that block the armored division falls to its organic engineer battalion. For the story of how this battalion operates, **ARMOR** turns to the area of great mobile campaigns—Western Europe—where one of our two regular operational armored divisions—the Second—is stationed on the scene of previous combat triumphs. The commanders of the 17th Armored Engineer Battalion give us the details of **ARMORED ENGINEER SUPPORT**.—Ed.*

The writer of the following served as operations and executive officer of the 34th Engineer Combat Battalion during World War II, participating in the invasion of the Marianas Islands and Okinawa. He has been in the European Command since May 1950 and in command of the 2d Armored Division's 17th Armored Engineer Battalion since April 1952.

The 17th Armored Engineer Battalion, with the 2d Armored Division (Hell on Wheels), returned to the European Command during the summer of 1951. In the past fourteen months, while settling down at their new duty posts and overcoming the usual difficulties of inadequate facilities, the division and the 17th AEB have been training continuously to fulfill their roles in the NATO forces. The nature of the training, ranging from field exercises for reinforced companies through participation of the division in major field exercises, has served to establish and test Field SOP's and the capabilities and limitations of all organizations and their equipment.

The present day Armored Division with its large number of heavy vehicles operating at great speed and at times extreme distances requires considerable engineer support for maximum battle effectiveness. This support is provided primarily by the engineer component of the division, the Armored Engineer Battalion, which is specially trained and equipped to execute general engineer tasks and provide services which increase the combat effectiveness of the Armored Division. The nature of the work performed by armored engineers does

not differ materially from that executed by their brother engineers of the infantry division. However, maintaining the mobility and momentum of the combat commands and their several armored task forces in rapidly moving situations imposes a greater urgency for initiation and completion of engineer work. Hence, in the armored division the engineer support is far more decentralized, and armored engineer squads and platoons with their tools, mounted in armored personnel carriers, literally travel under the tankers' guns.

A fully organized and equipped armored engineer battalion is quite a sizable package; in fact it is the largest battalion in the armored division and Corps of Engineers. Recent field operations in Europe have proven that present organization and equipment of the AEB is adequate in most respects. Some points worthy of study and development in TO & E of armored engineer battalions are: provision of suitable vehicles to enable battalion headquarters sections to op-

erate "on wheels"; addition of a fourth squad to each armored engineer platoon or a fourth platoon to each armored engineer company allowing construction of a small engineer reserve in each combat command to handle the urgent situations which continually arise; development of high-speed tracked trailers which can be towed by armored personnel carriers to carry tools, supplies, personnel and combat bridging; addition of a light aviation section to permit advanced aerial reconnaissance of roads, bridges, demolitions and river lines.

The normal bridge equipment of this battalion is the familiar M-2 Treadway Bridge which will probably be replaced in the near future by similar equipment capable of sustaining the heavier loads in today's armored division. Heavy bridge transport and erection equipment is relatively inflexible, costly and extremely vulnerable to ground fires, and the reluctance of both armor and engineer commanders to march such equipment near armored spearheads is understandable. In response to a need for suitable combat type bridging which can move with armored columns and be assembled without heavy erection equipment, the 17th Armored Engineer Battalion has pioneered in development of a combat bridge set utilizing the aluminum balk of the M-4 Ponton Bridge and accessories fabricated in the battalion shops. This equipment loaded on organic trailers and towed by armored personnel carriers or tanks provides a rapid means of crossing medium tanks, over effective gaps up to twenty-eight feet in blown bridges, craters, canals and small streams. An armored engineer squad can place a twenty-three foot bridge



Lt. Col. Albin



in thirty minutes or less, while thirty foot of bridge can be placed by two squads in forty-five minutes or less using only squad tools and equipment carried in armored personnel carriers. At present each armored engineer platoon of the 17th AEB is equipped with this experimental bridge set. Additional experimentation and design by development agencies of the Chief of Engineers and Army Field Forces along the lines of this experimental bridge set should produce a suitable combat bridge set with comparable characteristics and capable of sustaining the heaviest division loads.

The officers and men of the Seventeenth fully appreciate the importance of their part in the armored team and the role of the 2d Armored Division in Europe today. We are not just engineers or combat engineers, we are Armored Engineers because "We Pave the Way" for "Hell on Wheels."

LT. COL. LEON ALBIN

♦ ♦ ♦

*The writer of the following commanded Battery "B" 655th Field Artillery Battalion from its inception through its action in the Pacific during World War II. He was detailed to the Corps of Engineers in April 1952 and joined the 17th in June 1952 at which time he assumed command of Headquarters, Headquarters and Service Company.*

Just as the name implies, Headquarters and Service Company, 17th Armored Engineer Battalion provides a headquarters (or command post) and a supply service (or trains) for the battalion.

Eleven different sections comprise H/S Company. Seven of these belong to the command portion, and four are usually associated with the trains. This is a highly diversified unit composed of some sixty-three vehicles, two hundred men, and twenty officers. My vehicles range from cranes, graders, dozer and dump trucks to half tracks, weapons carriers, and jeeps.

Before the echo of a division march order dies, the company is loaded and roars out in three march units. The command group takes off as one unit consisting of the command, ad-



Capt. Broyles

ministrative (S1), intelligence (S2), operations (S3), communications, and medical sections. The trains leave usually in two march units, the first of which consists of seventeen dump trucks and trailers plus lighter vehicles which comprise the supply section. Lastly, the equipment and maintenance platoon lumbers out followed by the battalion maintenance section. The company headquarters section normally marches with this last unit.

The instant the division is committed to a tactical mission the company is further dispersed by the nature of the specialized equipment within the sections. As an example, the supply section sends out four water points to different task organizations within the division, the commander sends out the reconnaissance section to survey and estimate routes, the equipment and maintenance platoon may be sent out to maintain and repair roads and assist in bridging operations.

The battalion command post generally retains the major portions of its sections and is kept in close proximity to the division command post. Our battalion commander is a division special staff member, the Division Engineer, and maintains close liaison with the Division Commander in an advisory and consultant capacity.

The supply section usually establishes itself somewhere midway between the division supply point and the battalion command post. The supply section is further subdivided into three major categories: the water points, division (Corps of Engineers) supply, and battalion supply.

The remaining trains elements usually close with the supply section. The battalion supply officer assumes

command of the battalion trains, sets up his own command post and keeps communications with division and battalion by radio. In his absence, I automatically assume command. The trains include the uncommitted portion of the Bridge Company.

This is quite a unique situation for a company commander. I carry a rather impressive number of men on my morning report and am signed for an immense amount of equipment, but in the field, my direct command may dwindle down to a kitchen truck with water trailer and a supply truck and trailer with the scant personnel it takes to man them, as we go all out to keep "Hell on Wheels" striking with full armored might.

CAPT. STEWART F. BROYLES

♦ ♦ ♦

*The writer of the following served with the 3d Engineer Battalion throughout the Pacific during World War II. He was separated in December 1945 and returned to active duty three years later and assigned to the 17th Armored Engineer Battalion. He has commanded "A" Company during the last three years.*

During a combat command attack the Armored Engineer Company is usually split among the infantry and tank battalions of the combat command, with one platoon supporting each battalion task force. I keep my company headquarters within shouting distance of the combat command forward CP so that I am readily available to the Combat Command CO and that my support equipment is forward for rapid dispatch where needed.

The normal platoon leaves the company with the ¼ ton jeep, 3 half-tracks, one 2½ ton dump (the other remaining with company headquarters) and an M47 tank. When this platoon needs reinforcement or additional supplies, company headquarters sends these items forward. The platoons have at their call three bridge erection trucks, attached to the company from Bridge Company, each carrying sufficient treadway for a 24-foot clear span. With the platoons stripped of all heavy and slow moving equipment they can keep up with the fast moving columns of the ar-



mored division, ready to support.

The placing of the platoon in the column of the infantry or tank battalion sometimes presents a problem. My platoon leaders recommend at least one engineer squad behind the two lead tanks and the remainder of the platoon behind the lead company. Then fast and positive engineer support is provided, and the column is not held up abnormally long while one tries to extract the engineers from the rear and pass them by tank and infantry companies.

In the hasty river crossings typical of armored operations our platoons cross their supported infantry and tanks in assault boats and ferries and

with the combat commander and the remainder of the time visiting widely scattered platoons and task force commanders. Thanks to a radio in every jeep and every squad half-track and platoon tank, constant communication is normal and speeds up all actions and decisions.

Probably the greatest problem of combat command support is resupply of platoons at night with rations and POL. We've found that if engines are cut while at the halt 20-30 gallons of gas per day are sufficient for a half-track and platoon requirements are insignificant to a tank battalion.

I firmly believe that with the coming of the full-tracked squad carrier the most pressing problem of the Armored Engineer Company today will be solved; that is, keeping engineer support always with the tank columns in their cross country dashes. The company and platoons are well armed and can do their normal mission with little or no change in organization and equipment.

CAPT. WILLIAM R. THOMPSON



*The writer of the following entered military service in 1942. He was commissioned in the Signal Corps but soon found his place with the 1143d Engineer (C) Group during its World War II action in the ETO. He joined the 17th Armored Engineer Battalion in March 1950 and four months later became company commander of "B" Company.*

Armor must strike with the force of a thunderbolt and like thunder it must keep rolling. The armored engineer therefore has a twofold job; first, to aid in the power of the initial attack by removing obstacles; and secondly to keep them rolling by bridging craters, creeks and culverts. To do this he must be far forward with the initial shock elements and work rapidly so as not to retard the momentum of the attack. This calls for mobility and ingenuity since the armored division bridge is relatively slow moving, bulky, and highly susceptible to enemy fire. The armored personnel carrier, with its ability to take off across country and bypass obstacles, gives the Armored Engineer Company the mobility it needs to keep up with the forward tanks. The 17th was able to devise a light ex-

pedient bridge, that could keep up with the advance but still be strong enough to carry the Medium Tank, from M-4 aluminum balk. Ingenuity and some special transverse stiffeners (manufactured in the 17th's shops) produced a highly portable bridge that could carry the division load over gaps of from 20 to 30 feet and yet could be installed at the rate of a minute a foot by a squad of men without mechanical equipment.

However, as the advance continues, the old bugaboo of strategists, the exposed flank, starts to develop. Here again the armored engineer must go quickly to work to block enemy counter thrusts along the line of communi-



Capt. Thompson

join them on the far shore as soon as possible to keep the attack rolling. Some cross in assault boats with hand tools; our tracks cross the ferries behind the lead tanks as we turn over ferry operation and bridging problems to supporting engineers from our battalion.

Attached to my company from H/S Company is a water point which supports the combat command. We conduct reconnaissance for the water point, have it installed and operating, furnish it security, and move it out when necessary to a more forward location. It is usual to set this water point near the combat command trains so that units going back to form for the road march to the division supply point can draw water with minimum difficulty.

Company headquarters is usually moved forward by the first sergeant and administrative warrant officer (when I'm fortunate enough to have one!). I spend about half my day



Capt. Hinton

cations. To neutralize this threat the 17th, after considerable hard work and experiment, devised a series of Battle Drills to meet varying situations. The Armored Engineer Squad, using the "Mine Road Block" drill can effectively block a road with a pattern of 8 and 10 AT mines, completely buried and camouflaged, in about six minutes. The "Abatis Drill" enables the squad to block a road with trees in 10 to 12 minutes depending on the number of trees to be felled. It is all done by applying the old Army method of "By the Numbers." Each member of the squad has a number and each number specifies a specific job ranging from the squad leader, who gives the command and indicates the position of the obstacle, down to the man who acts as security outpost. The drills are first practiced at a slow walking pace until each man knows his job exactly. Then they are gradually speeded up until each move is made on the



double. After each man is adept in one role the numbers are rotated, as in artillery gun drill, until every man can perform any of the assigned tasks. The Armored Engineer Company with its 9 squads using these drills can rapidly and effectively provide obstacles to hamper enemy mechanized attacks along the flanks.

Should a Task Force or combat command be cut off, as might happen at any time during an armored exploitation, the engineers within a few minutes can set up a perimeter defense or a series of strong points with these drills. When covered by fire these hasty blocks will slow down or even stop an enemy counterattack.

In addition to those mentioned above, the 17th has planned and tested battle drills for road craters, a pioneer tank road through a heavy woods, log mattress roads over marshy areas and clearing enemy mine blocks. By reducing waste motions and having every man know exactly what he is to do before arriving at the job site, each of these formerly time consuming operations has been reduced to a matter of minutes. Minutes saved under enemy fire probably means lives saved. Every minute saved helps to speed the tanks to successful completion of an operation.

CAPT. EDGAR A. HINTON

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*The writer of the following served in the ETO during World War II with the 1109th Engineer (C) Group. He was recalled to active duty in 1947 and spent the next two years in the Pacific. In April 1949 he joined the 17th Armored Engineer Battalion, assuming command of "C" Company in January 1950.*

Tanks keep getting bigger and faster and it taxes the ingenuity of the armored engineer to the utmost to keep them rolling at top speed.

In the 17th Armored Engineer Battalion, we're always on the look-out for the quickest and easiest way to keep those combat commands of the 2nd Armored Division moving when minor obstacles crop up during our numerous field exercises. As all second-trippers to USAREUR know, and newcomers quickly learn, most of Central Europe is honey-combed with a variety of irrigation

systems. These range from small natural streams 6 to 8 feet wide, which have been improved with small dikes and flood gates, to canalized rivers. Most of these are effective tank barriers, especially during rainy weather and when the snow melts in the spring. Our current answer to this problem is in the use of M-4 Aluminum balk. We have drawn from Depot stock a sufficient quantity of this M-4 balk to equip each platoon of the line companies with 10 pieces each of long balk and short balk. This balk is carried on the platoon's pole trailer, makes a neat compact load, and is pulled by one of the platoon's half-tracks. This load is sup-



Capt. Haynes

plemented with 2 pieces of 6 by 6 or 6 by 8 for use as sills, four logs 4 feet long and approximately 10 inches in diameter for use as ramps, and four made-to-order transverse stiffeners fabricated in our battalion shop. The armored engineer squad with this equipment can span gaps of 14 feet using only the 10 pieces of long balk in approximately 12 minutes working time, or it can span 22 feet using both the long and short balk in 15-30 minutes. By using the bridge load of two platoons we can bridge a gap of 28 feet in 30-45 minutes time.

We believe this is the answer to short gap crossings. Another good feature of this expedient bridging is that it can be shifted in 5 minutes time to take either tank or vehicular traffic. It further offers an opportunity for tank companies to advance on a company front rather than canalize themselves on a one-way-avenue of approach.

This bridging material has the fol-

lowing advantages over our T/O&E M-2 Treadway Bridge, of which each line company during field exercises has attached 72 feet of Dry-Steel: It requires no special equipment or tools other than what is carried by the squad on its half-track. It can be transported and placed in locations inaccessible to the Brockway truck. It can quickly be picked up and loaded, and is ready for use when next needed. It will support any armored division load and can be placed by inexperienced troops after only two hours training. The trailer load does slow down a half track, but when we get our armored personnel carriers we'll have this problem licked.

CAPT. LUTHER S. HAYNES

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*The writer of the following served in the ETO during World War II with an Engineer Dump Truck Company. During 1949-1950 he served with the 70th Engineer Combat Battalion in Austria. He joined the 17th in September 1950, moved to the European Command with the unit in July 1951 and assumed command of "D" Company the following month.*

Combined arms teamwork is the secret of success in the exploitation of an Armored Division's characteristics. The armored engineer is an important part of this team and in order to accomplish his mission he must be right up with the lead tanks and armored infantry. The armored engineer unit is normally the platoon which is followed very closely by the company headquarters. The platoon is equipped with an M-4 balk bridge set and has available at company headquarters "dry loads" (Treadway truck with booms, less the floats and accessories) which enable the platoon to call for and get additional bridging for narrow gaps. The construction of these short gap bridges has been developed into a battle drill, in which each member is assigned to a team with a specific job or jobs to do during the entire period of erection. The team members are rotated so that each man becomes familiar with and can perform all the assigned tasks.

A very similar drill has been worked out for the construction of a class 50 ferry. Each platoon has



trained diligently so that almost no time is required for team organization for building the ferry and more time can be spent on reconnaissance, checking of "marriage" loads and coordination with company and task force commanders.

Our battalion is sufficient to support the river crossing needs of the division only for hasty or small scale operations. For maximum speed and efficiency we have formulated a detailed bridging plan SOP for river crossings. The following pre-operational tasks fall to the company constructing a floating bridge.

- a. Reconnaissance.
- b. Marriage of bridge equipment to construction unit or element in



**Capt. Waddell**

assembly area into march organization facilitating security and orderly arrival on construction site.

- c. Inspection of equipment.
- d. Assignment of construction tasks; organization of details.
- e. Filling sandbags and cutting timber for abutments and landings.
- f. Preinflation of maximum number of floats and loading on improvised 2½-ton truck carrying rack.
- g. Distribution of hand tools, equipment and life belts.

Special emphasis is placed on the marriage of bridge equipment to the construction unit, and mutual responsibility of the construction and bridge element commanders for the inspection of equipment. Movement onto the bridge site, the initial assignment of tasks and the spotting of bridge erection equipment are accomplished according to a prearranged plan. All personnel habitually know their work sites in relation to bridge equipment.

We place a great deal of emphasis on bridging in the 17th, for no obstacle stops Armor so thoroughly as a major stream. All of us take pride in our capability of getting the tanks across and keeping the armored thrust rolling. It takes long hours of field training to maintain proficiency but we're proud of being a major cog in "Hell on Wheels."

**CAPT. EDWARD S. WADDELL**



*The writer of the following entered military service in 1940. During World War II he served with Aviation Engineer units in the ETO. He joined the 17th in April 1949 and assumed command of the Bridge Company in March 1951.*

In today's fast, mobile, and highly maneuverable armored division, it is necessary to provide a bridge suitable to carry the division load across any stream or short clear spans.

Presently the Widened Steel Treadway Bridge is carried as organic bridging and it is the responsibility of my company to provide bridging with the combat commands for short gap crossings and to maintain necessary bridging for ferry construction and limited stream crossings in reserve.

The Bridge Company, in the carrying out of its mission, provides each letter company supporting a combat command with 72 feet of dry steel on three Bridge Erector trucks thus maintaining a reserve of bridging capable of erecting one 72-foot ferry and a stream crossing of 288 feet.

After commitments are made to combat commands, remaining bridging is made up of units which can marry with the construction elements of a letter company on call, to be moved forward to the construction sites in proper sequence to provide a continuous flow of bridge equipment.

To fully understand the problems concerned with the fulfillment of the mission a general knowledge of the equipment which transports and erects the bridge is essential.

The Bridge Company consists of two identical bridge platoons with company headquarters providing the heavy equipment. Each Bridge Platoon carries 288 feet of floating bridge and is provided with 18 bridge trucks. One bridge truck, fully load-

ed weighs approximately 22 tons. Each platoon has in addition three 2½-ton dump trucks, one ¾-ton truck, one 25-foot powerboat, twenty-one assault boats, eight 22½-hp outboard motors, three pole-type trailers, and one ¼-ton jeep.

In Company headquarters there are two cranes, two D-7 dozers, one 210 CFM air compressor, one 2½-ton dump truck, one 2½-ton cargo truck, three ¾-ton trucks and one ¼-ton jeep.

When in operation the following is general data which must be considered in moving or displacing the Bridge Company.

To move the Bridge Company 100 miles it takes approximately 3,000



**Capt. Stilwell**

gallons of gasoline and under tactical conditions to bivouac the Bridge Company an area of ¼ mile in width by ½ mile in length is required to provide adequate dispersion of vehicles. Being a wheeled vehicle of great weight, the bridge truck requires carefully selected parking areas, in order not to become mired in wet weather. Roads must have a firm subgrade, be at least 10 feet in width and be covered from observation by enemy artillery, as the bridge truck has a greater silhouette than the M47 tank and cannot easily take evasive action from enemy fire.

In the 17th we keep our Bridge Company far enough forward to move without delay to crossing sites, yet being careful not to block the roads and impede the progress of combat vehicles. We make sure that when "Hell on Wheels" needs a bridge, ours is at the right place at the right time, complete and ready.

**CAPT. JAMES L. STILWELL**



*The military writer is an accepted figure in a world familiar with global warfare. His books, columns and articles are read well beyond the military area, just as his writings overlap into such related fields as geography, foreign affairs, history, politics and science. Here is a story on one who is perhaps as widely read and quoted as any on today's international scene.*

## Liddell Hart: One View

by COLONEL ROBERT J. ICKS

**F**EW military writers of our own time or any other are better known or as often quoted as Basil Liddell Hart—and none is or has been so controversial a figure. The military thought of our time throughout the world has been influenced by him. Whether that influence has been good or bad depends upon the viewpoint of each individual or nation but that it exists cannot be denied. Perhaps it is time for a re-evaluation of the man and his doctrines.

Liddell Hart occupies an undisputed position as a leading military historian. As a writer and journalist his copy always is current and readable, but whether he is a military theorist of note or a false prophet is where opinions on him diverge, often violently.

Regardless of one's views concerning him, and those views vary from blind devotion to violent disagreement, it is his very articulateness which causes one to take a stand con-



U.S. Army  
B. H. Liddell Hart on the occasion of a recent address at the Armored Center, a stop on his lecture tour.

cerning him. He has the gift of making even complex military problems simple to understand and at the same time presents them in relationship to the larger aspects of their impact on national and international situations.

But are his theories and opinions valid or merely plausible?

What sort of individual is Liddell Hart? First, the man. He was born in Paris on October 31, 1895, and was educated in England at St. Paul's School and then at Corpus Christi College, Cambridge. He served in the King's Own Yorkshire Light Infantry, going to France in 1915. He was severely wounded in 1916 and this led to his beginning to write on military matters. These writings attracted attention and some of his proposals were officially adopted. The ideas concerning armor which General Fuller propounded after World War I fused with his own and he began to propound theories of a "New Model Army."

Invalidated out of the Service in 1924, he began writing in earnest about tactics and warfare, and then was appointed military correspondent of the *Daily Telegraph*, a position he held for some ten years. Following that, he held a similar position with *The Times*.

Such a background would have been commonplace except that his writings were bold, frank, prolific and thought-provoking in their impact not only in England but elsewhere in the world. Sweden, Denmark and Switzerland consulted him on internal

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COLONEL ROBERT J. ICKS, Ordnance, Reserve, is a recognized authority in the field of armor. Author of the book *Tanks and Armored Vehicles* (1944), he has carried on a correspondence with B. H. Liddell Hart over the course of many years and is well acquainted with the man and his works.



military problems and his own country did likewise. Such responsibilities were bound to result in controversies regarding him. In England he had to suffer the consequences of political involvements on several occasions and internationally came in for criticism for his influence in the international Disarmament Conference, and in other ways thereafter. The French were incensed over his criticism of their military theories as well as by his influence, real or imagined, on British commitments for a BEF in the event of war.

#### War Ministry Advisor

He was essentially a patriot and he feared French military capacity. He felt that a conventional BEF would only be ensnared on the Continent. The British government itself fluctuated in its views toward armament during this critical period. Eventually Liddell Hart became associated with an advisor to Hore-Belisha when the latter became War Minister in 1937. He unquestionably contributed greatly to the program of modernization which Hore-Belisha introduced. But both faced fierce opposition by the Imperial General Staff and later by the Cabinet.

Then the two began to have differences of opinion and the relationship was dissolved. Controversy with the Director of *The Times* over a complete reversal of policy by *The Times* caused him to leave because he felt there was a need to apply the spur of public criticism to governmental policies. For a time in 1939 he was associated with Churchill but resigned because he felt Churchill's bellicosity and attitudes were premature in the existing state of Britain's defenses. Controversy over the value of his contribution, illness from overwork and hurt through the adverse criticism he sustained, as well as the fact that he could not tell the truth in wartime, caused him to isolate himself for a time. Curiously enough, the British public continued to believe that he remained an advisor to the War Office even after the war began. It is odd too that his views on defense from 1938 on and for which he was so severely criticized then and still is, after all were the fundamental views of the British people, traditionally reliant on their navy rather than on their army and air force.

His theories of dynamic defense in 1939 represented a belief that it was necessary to buy time but the offensive view won out officially to the point where England, when in doubt, appeared ready to attack in all directions diplomatically with little military might to back up such a decision.

In 1941 he began writing for the *Daily Mail* and covered the war critically and analytically. Since World War II he has written a great deal on military subjects. His writing today perhaps lacks the great fire he once displayed. He has become more of a military philosopher but nevertheless he still is a potent figure on the international scene.

It was in the field of tactics that Liddell Hart became best known and which originally drew attention to him. He publicized mechanization constantly and consistently from the twenties on, and arguments raged over him because his tactical theories were considered radical and impractical. Soldiers frequently talk about the lessons of war but Liddell Hart continually harped on the point that they seldom used the scientific approach in studying and applying those lessons.

#### A New Model Army

His staff paper on the "New Model Army" written in 1922 and later published in the *Army Quarterly* in 1924 outlined his belief in tanks associated with infantry transported in armored carriers; in self-propelled artillery; in the close cooperation of aircraft with such an army; in the use of paratroops. Later, his proposals regarding guerrilla warfare and psychological warfare were added. He clung to these theories and gained a following both in and out of England, adopting as he did an intermediate position between the extreme views of Fuller and those of the conservative military faction. Criticism occurred again when the Germans almost won World War II by following his precepts. Later the Russians, and to a much lesser and later extent the Allies, defeated Germany by following them. These principles of his had been there for years for anyone to study or embrace and although the Germans gave him credit for their near victory, the Allies never have admitted his influence on their final victory.

Perhaps on this score one of his

earlier remarks could well be quoted—"Originality is the most vital of all military virtues as two thousand years of war attest. In peace it is at a discount, for it causes the disturbance of comfortable ways without producing dividends, as in civil life. But in war, originality bears a higher premium than it can ever do in a civil profession. For its application can overthrow a nation and change the course of history in the proverbial "twinkling of an eye."

#### Penetrating Comment

Another early and penetrating comment of his which was acid and devastating and which hit at false sentiment in war and its conduct was that concerning the use of poison gas. "The unconscious object of the sentimentalists who are striving to maintain the prohibition on gas is to preserve for the battlefields of the future, the beneficent effects of high explosive, which shatters the limbs, tears flesh into pulp and gives the stricken but one chance in three of recovery—a weapon which, unlike gas, cannot be used in a non-lethal form, and destroys not only life but property. Devastated areas are not the least of the evils of war and the development of air bombardment promises to increase the destruction of factories, dwellings and communications. High explosive, in fact, destroys the economic foundations of the subsequent return to peace."

How prophetic were both statements!

His influence was recognized in the realm of tactics and war generally by the thirties, and then he began to move into the field of national and international strategies at a time when theories of geo-politics developed and extremes of nationalism showed signs of a resurgence. The war clouds were rising and he was among the first to recognize that war was coming. His writings began to have a new quality, a groping toward truth in a larger and more nationally significant field.

Liddell Hart has always had a global concept of war and always has held strongly against striking along the path an enemy expects one to take. There were reasons why he held so tenaciously to the views he propounded in the late thirties when he was so closely associated with the



British government. He has consistently criticized the very human tendency of complacently clinging to comfortable prejudices rather than facing unpleasant truths. As he once said, "In my comments on contemporary affairs, I criticize conditions, not persons" but sometimes when "conditions" obviously resulted from the influence of specific "persons," his criticisms of them just as obviously involved those specific individuals and did not endear him to them.

The military generally, not only in England but elsewhere, could hardly be happy over his comment that "There are over two thousand years of experience to tell us that the only thing harder than getting a new idea into the military mind is to get an old one out"; his remark that "The philosophic historian may deduce that truth emerges as ambition recedes"; or the comment which hit diplomat and soldier alike—"When a man has climbed by hard effort to a ridge from which he gets a fresh vista—if only of further ridges beyond—he will usually find, when he tries to tell of it, that those who have remained contentedly in the valley insist that there is nothing beyond what they can see"; or "Unless we are honest about our past and alertly critical about our present, the odds are heavily against any improvement in our future—at our next test."

### Strategy and Grand Strategy

His human outcries against human failings so often angered people that they were blinded by their emotion to much of the incisive understanding he has of principles and long term effects. For example, "Too commonly in peace it is a case of tactics all the time, in bland forgetfulness that strategy takes precedence over tactics and that strategy is based on supply." And in the same vein but expanded was his "While the horizon of strategy is bounded by war, grand strategy looks beyond the war to the subsequent peace. It should not only combine the various instruments but so regulate their use as to avoid damage to the future state of peacefulness, secure and prosperous. Unlike strategy, the realm of grand strategy is for the most part still awaiting exploration and understanding." And going still further—"The enemy of today is the customer of tomorrow and often

the ally of the future. To inflict widespread and excessive destruction is to damage one's own future prosperity and, by sowing the seeds of revenge, to jeopardize one's future security."

Prophetic? Yes, but based on cold reason, as was his prediction that Soviet Russia would become the ascendant power after another European war. His later statement that "An aggressor who has overstretched himself in the spread of his conquests is particularly liable to suffer a spreading handicap as a result of his very success," is a prediction that at least brings some hope to a troubled world today.

### Postwar Criticism

He has been criticized for his postwar attitude toward the Germans. He is accused of being lenient and too forgiving but all of us have seen forced upon us a change in our national attitudes from that of disdainful victor to wooing swain, while Western Germany's position has changed from crushing humiliation to one of coy and clever bargainer on the international scene.

Still, for all the brilliant tactical theories he has conceived and all the thought-provoking comments he has made on strategy and on grand strategy, and for all his scientific analyses of famous military personages and campaigns, he has been wordy, and his great truths sometimes have been buried under an avalanche of language, interesting to read, perhaps, but more entertaining than scholarly. In many ways this has been unfortunate because it gave his opponents material with which to discredit him. Yet, as a journalist, such voluminous but sometimes pointless writing was to be expected.

He has another fault in his habit of lifting parts of old essays or repeating them in their entirety. Some of his writings thus are a combination of "dated" beliefs and of fresh viewpoints. Another criticism which justifiably could be made is his "what might have been" comments. hindsight is better than foresight and no one likes to be reminded of mistakes. To many it is galling to be so reminded. Lessons from the past, yes. Destructive criticisms, no. And lastly, for all his scientific approach to military and national problems, he himself is not always free of emo-

tional thinking which at times colors his almost unique and creative reasoning ability.

Yet he appears to possess a phenomenal memory, coupled with an ability to isolate and to sort out problems, state them clearly and suggest solutions, together with a scientist's passionate devotion to the determination of facts and their interpretation.

Why this strange paradox? I do not know but I suspect that the abattoir which was the Western Front in World War I has made him a true pacifist. He strikes out against mass slaughter conducted as though it were war and masquerading as military art. His is the mind of the thinking soldier who abhors slaughter because he has experienced it but who pleads that if war is to continue as an instrument of national policy it be conducted thoughtfully as an instrument and not degenerate into slaughter for its own sake.

His conclusions sometimes may be inconsistent; he sometimes may contradict himself; he may be a false prophet; but at least he is thinking seriously about problems to which so many others give lip service but are dishonest about for political expediency or for some other reason. He hopes to avoid war but if it comes he wants to fight it with a minimum of losses and to anticipate the achievement not only of victory but of a planned peace to follow.

### Issues and Honesty

He deals with dreadful and vital issues and thinks deeply and honestly about them. Try as any man will, he cannot completely divorce his emotions from facts as he sees them. But so far as it is humanly possible, I believe Liddell Hart tries with honesty. His criticism may be severe but it is always intelligent and to the point. If he has written too much and some of his original thinking is buried in a mass of extraneous words, that is only human and, in his case, a concession perhaps to economic necessity.

His ideas may not always be palatable but he hopes to make others think, to spark other minds to think, negatively or positively, but to think.

One is either for him or against him. One cannot remain neutral—and that appears to be the way he would have it.

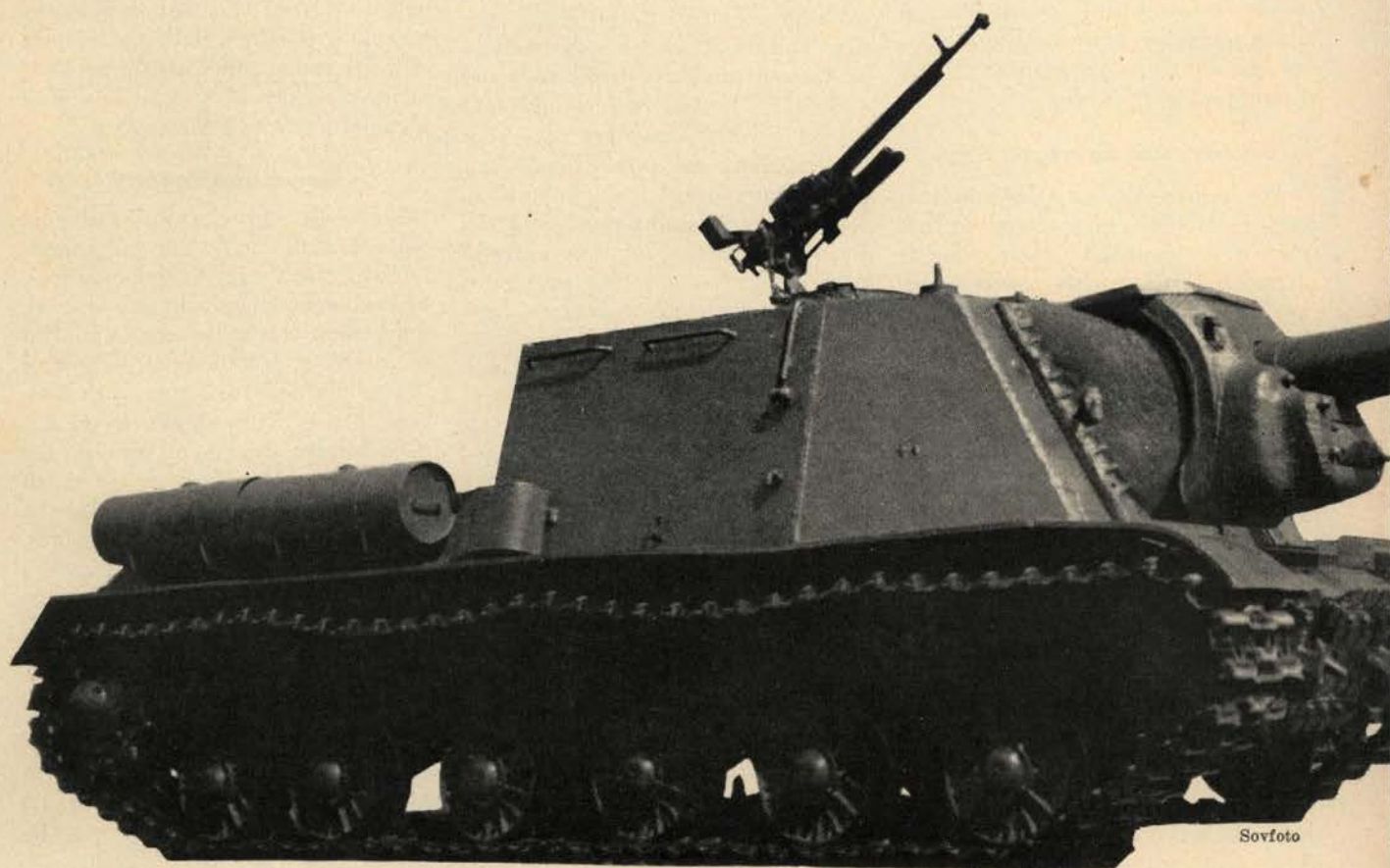


*Western guesstimates of Soviet armor masses have been made in terms of turreted tanks. An expert tells us here that our figures must be revised—upwards—by at least a third. The reason—the Soviets' big and powerful assault guns, the SU's*

## THE STORY OF SOVIET ARMOR

### "SU's": Assault Guns and Self-Propelled Artillery

by GARRETT UNDERHILL



Sovfoto



**I**F the free world's tankers and infantrymen should ever have to face current-type Soviet armor, most likely it wouldn't be the now famous T-34 and Stalin tanks which would give them the most trouble. It would be the powerful "SU's": the big Soviet assault guns which so many Americans so often—and so mistakenly—call "self-propelled artillery."

By the U.S. Army's military dictionary definition—and by past and present definitions of Army Ordnance, these SU's class as *tanks*. They are track-laying combat vehicles, with good cross-country performance. Their crew space is completely armored in. In fact, they are very much like the little-known U.S. 100-ton tank of 1944, built (too late) to break the Siegfried Line. This U.S. tank, instead of mounting its long 105mm gun in a turret, carried it low down in the sloping frontal plate of the hull armor. In this respect, both the U.S. monster tank and the Soviet SU's resemble the line of assault guns begun by the Germans in 1939. Soviet SU development actually has been strongly influenced by German assault guns, both as to design and general concepts.

Like the Germans' assault guns, the Soviets' SU's grew to loom large



Jean Raeburn

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These facts are not to be passed over lightly. They tell the West that people who counted only turreted tanks in their reckoning of Soviet armor masses, must radically revise their reckoning. *They must increase by at least a third the number of pieces of Soviet shock armor the West has to worry about.*

The numerical strength of the SU's would alone demand far more attention for them than they have re-

ceived in the West to date. When their armament and tactical roles are considered, the SU's become of even more vital interest to the free world's military.

Americans have worried about the heavy Stalin tanks, with their 122mm guns. They have gone to some trouble to develop a 120mm "heavy gun tank," which (it is said) "can out-slug" any other tank in the world—including the Stalin. But American fears (and remedies for those fears) fail to take into account the fact that Western armor must meet heavy-gun SU's, as well as heavy-gun Stalins.

If the U.S. Army definition of tanks is followed, the Soviets have long had in the SU armor category two "heavy-gun tanks," one of which deserves far more Western attention than the Stalin. For it is the faster SU-100 (with a more efficient armor-fighting 100mm gun than the Stalin's 122mm) which since World War II has come to be the prime Soviet Army antitank weapon.

The other heavy-gun SU isn't a good antitank weapon, but it can certainly slug. To deal with infantry field fortifications and fortified towns and villages, this JSU-152 fires high explosive shells weighing over 95 lbs. It thereby brings medium artillery support down to the tank company level. Despite its slow rate of fire, this JSU-152 is supposed to engage armor with armor-piercing shell and shot weighing even more than its HE—and to get in its opening rounds at phenomenal ranges.

These facts have an unpleasant significance for the West, too: they warn that *the Soviets have not one, but three standard "heavy gun" tanks in wide use.*

Soviet tactical employment of SU's makes obvious just why this armor should be of such vital interest to Western tankers and infantry. The main job of the SU's is to provide *over-watching fire* for the fast-moving mediums (and on occasion heavies) which lead off both types of Soviet assaults: *armor-shock* (in which armor is dominant, and infantry largely for protection of armor), and *tank-supported infantry* assaults.

Indeed, the important role of SU's in the latter type of attack is likely to be somewhat obscured by the term "tank-supported." For the wave of Soviet medium tanks leading off such

*The Story of Soviet Armor* has appeared as a staggered series in this magazine. The section entitled "Early Years" was published in the issue of Jan-Feb 1949. The second section, titled "The Middle Ages" (the 1930's) ran in the May-Jun 1949 number. A complementing article, "Backlight on Soviet Armor: Russian War Industry Through the Ages," appeared in Nov-Dec 1949. In the issue of Mar-Apr 1950 began the section titled "The War Years," with the coverage of The Tank appearing in that issue and the following number of May-Jun 1950. In carrying along "The War Years," there appears now the section devoted to SP's. Coming serials will round out the series with something on tactics, people, armored cars and trains.

—Ed.

in importance in World War II fighting. Since the war, the trend towards emphasis on SU's has continued. As a result, SU's are now a permanent part of the "armored regiment" setups of postwar-type Soviet divisions. *This means that there is roughly one powerful heavy-gun SU to every two or three turreted medium or heavy tanks.\**

\*Only in the Mechanized Division's so-called Mechanized Regiments (actually motorized infantry, each with a tank unit approximating U. S. company size) are there significant armor units without their own SU's.



an assault has usually relied mainly upon speed and shock—upon mobility for surprise, for protection, and for shock action. ("Shock" is often literal: they like to overrun, ram, and crush as well as shoot.) These medium T-34's move as fast as the terrain permits, firing on the roll; not from halts.

Thus this initial medium tank wave employs *assault* (marching) fire, while the SU's—following by bounds from one hull-down firing position to another—supply the *aimed* fire. The SU's advance within the infantry formations following the tanks, gaining their protection both from the GLvans and use of cover, as well as from their armor.

So if the Western infantryman is confronted by a Soviet tank—probably it'll be charging at him like a mad bull, firing all its armament—85mm gun and cal. .30 machine guns (coaxial and bow). If he keeps in shelter to avoid the spray of tank fire, and to keep from being overrun—the tank will roll on through. The Russian rifleman (running to keep up with the tank wave) will be right upon him.

If he opens fire with a recoilless weapon, the speed of the tank (the Soviets hope) will make it a difficult target for low-velocity bazookas and recoilless guns. And whenever the over-watching SP crews see recoilless weapon flashes—and these weapons' muzzle-and-backblasts—they will deal out 100 and 152mm high explosive shells at high velocity.

Such fire is likely to be delivered at ranges embarrassingly great for low-velocity recoilless weapons. The present SU's are the product of a long Soviet-German contest to get a range advantage in both the *armor vs armor*, and *armor vs antitank weapons* contests. Hence it is not surprising that even in World War II the SU's were trained to use direct-laid fire up to 3,000 meters (3,300 yards). A prime reason for the introduction of the SU's large-caliber guns was to obtain an HE burst easily spotted (and hence more easily adjusted) at maximum direct-fire ranges. The Soviets also wanted to get an HE round big enough to make things really rough for weapons crews in the vicinity of a shellburst, either from concussion or fragments.

For the Soviet armor was always confronted by increasingly formidable German antitank defenses. These included plenty of the "cheap" variety of antitank weapons: *Panzerfauste* (shaped-charges able to hole 8 inches of armor, and fired to 100 yards or better by throw-away launchers—issued to troops as needed, like grenades); 3.46-in. bazookas (R.Pz.B. 43's, of 1943, similar to the U.S. 3.5-in. introduced in 1950); and shaped-charge shells for all kinds of artillery. But the German defenses normally were based upon formidable flat-trajectory guns, like the hyper-velocity 88mm Pak 43 (firing tungsten-carbide-core shot at a muzzle velocity of 3,705 ft. per sec. up to 2,620 yds. in direct fire; and AP shell at 3,280 f.p.s. to 4,370 yds.—as compared to the U.S. 105mm shaped-charge recoilless gun of 1950, which has been publicized as a fairly low velocity weapon designed to knock out any tank at 1,500 yds. This 88 fired shaped charges, too—to 2,730 yds., at 1,968 f.p.s.).

If the SU's are likely to make it hot and heavy for hostile infantrymen trying to fight off Soviet armor, these same SU's are intended to make it really rough for hostile armor. The Western tank seeking to engage attacking Soviet mediums, probably will find the latter (as in World War II practice) withdrawing to a flank, or back through the SU's. The SU's will take over the *armor vs armor* battle, although the mediums will try to intervene on the hostile flanks and rear. Naturally, SU's which were built to gun-down 88's of the Pak 43 variety are tough nuts—for they were also built to gun-down German tanks and assault gun/tank destroyers mounting the same model of hyper-velocity hole-puncher: 88mm Kw.K. of the Royal Tigers add the similar *Stu. G.* of Hunting Tigers. (It is heartening to note that, while the Soviet tank-SU combination of medium and heavy gun tanks could usually "snow" antitank defenses, well-handled—even if materially inferior—German armor often proved to be the combination's nemesis.)

When the use of SU's in the attack is understood, it is easy to understand that—in mobile warfare—SU's may prove even more important than in assaults on prepared positions, and in fighting hostile armor acting as



The Soviet 76mm self-propelled infantry howitzer was on a six-wheeled truck.

International



antitank. As Soviet forces work into and through hostile positions (the "combat in the depths of the enemy defenses"—always extremely critical to Soviet-type troops), and as they break out into the open, they find quick reactions to combat conditions increasingly essential to continuing success. They find shock action as valuable, on the same ascending scale. Hence it takes little imagination to understand how World War II experience caused the Soviets progressively to hand over the job of armor support to SU's—how, as the attack progressed, these SU's increasingly assumed the role of indirect-fire field artillery. Tanks didn't have to depend for support on called indirect-artillery fire; they had it—often without asking—from over-watching, direct-laid, flat-trajectory, heavy-caliber SU guns.

Indeed, it would appear that the striking development of SU's—which coincided with the development of Soviet offensive action in World War II—has been in no small part an effort by the Soviet armor arm (the Tank and Mechanized Troops) to find its own solution to the shortcomings of Soviet field artillery. For despite all the hoopla and propaganda, Soviet World War II field artillery was notoriously inflexible in its conduct of fire. Consequently, as attacks developed and situations arose which were not covered by pre-planned artillery fires, Soviet armor either had to provide its own support, or do without.

As a matter of fact, with Soviet Infantry it was the same: the Artillery, in order to furnish adequate support against targets of opportunity and to assure destruction even of previously identified targets during an attack, went in a big way for direct-laid towed guns. Numbers of the lighter of these weapons—usually the 57mm and 76mm guns—tried to keep up with the Infantry assault. But naturally towed or man-handled guns couldn't keep pace with armor, nor supply support of sufficiently large caliber. Hence SU's

The Soviets have made much of their past and present emphasis upon this use in the attack of direct-fire artillery support—both with towed pieces and with SU's. But though there may be certain things to be said for such a weapons system, the fact

### Terminology Note

The West's failure to appreciate the *shock armor* importance of SU's appears to derive from poor handling of terminology—on the part of Soviets and Westerners alike.

The Soviets call their assault guns "samokhodniye ustanovki": literally, self-propelled mounts. Abbreviated as "SU" ("CY" in the Cyrillic alphabet the Soviets use), the term is pronounced like "Sue." Assault guns using the chassis of the Joseph Stalin tank are called "ISU" ("Eee-Sue"). Individual vehicles are designated by using "SU" or "ISU" plus the gun caliber, as in "SU-100." The whole development receives as a generic term "SU," and sometimes "SAU"—the "A" being for artillery, giving this term roughly the pronunciation of the English for a female pig.

It would appear that many Westerners have gotten a confused idea of the role and vital importance of SU's, simply because they took over the Soviet terms and translated them literally. Hence the common use of SP's (self-propelled guns) for SU's.

Unfortunately, the mass of the U.S. military appear automatically to think of SP guns as self-propelled field artillery—like U.S. armored artillery today; or else as tank destroyers or flak. *They do not think of SP guns as assault guns more properly classed as tanks.*

This error of attitude—consequent upon faulty handling of terminology, and upon failure to examine the tactics and technique of the foreign weapon, and then apply a term meaningful to U.S. troops—only repeats World War Two's American failure properly to designate and appreciate the great force which was German assault artillery. It can only be said that, while the Germans did give their assault guns' tactical role in their designation (Sturmgeschütze), there is nothing in the Soviet "SU" to indicate that the Reds mean *formidable shock armor*, instead of armored field artillery designed primarily for indirect fires.

remains that it was (and is) by and large an expedient to cover up for the deficiencies of artillery indirect fire techniques, and the apparent inability of Soviet field artillerymen to attain the proficiency of Westerners.

(Americans, both civilian and military, may search far and wide for a point of vantage over Soviet Russia's army masses—but actually, if they knew well the respective forces, they'd know where our most fantastic advantage lies and has long lain: in the factory producing military miracle-men cheap, at Fort Sill, Oklahoma.)

It is important to understand that the SU crews do not intend to match their skills against those of the slide-rule wizards from Sill. The SU's job is direct-laid fire through telescopic sights. They may infrequently undertake indirect-fire missions, but only observed fire—and that up to the limit of observation, which the Soviets have long figured to be about 5,000 meters (5,500 yards, as compared with the U.S. Artillery's limit of 5,000 yards). Past and current-model SU's have not been built with the on-carriage fire control to fire off maps. Moreover, the very limited traverse of all SU's is a great handicap in indirect fire. They are not like our Shermans with 105mm howitzers in their turrets—as used in U.S. Armor's assault gun platoons. Anyway, like the Germans, the Soviets do not approve of using assault guns for indirect fire—except in exceptional circumstances. Apparently the Russian likes to find his target, with his own eyes, get the gunner's scope on it—and pour in the fire, in the great Russian close-combat tradition.

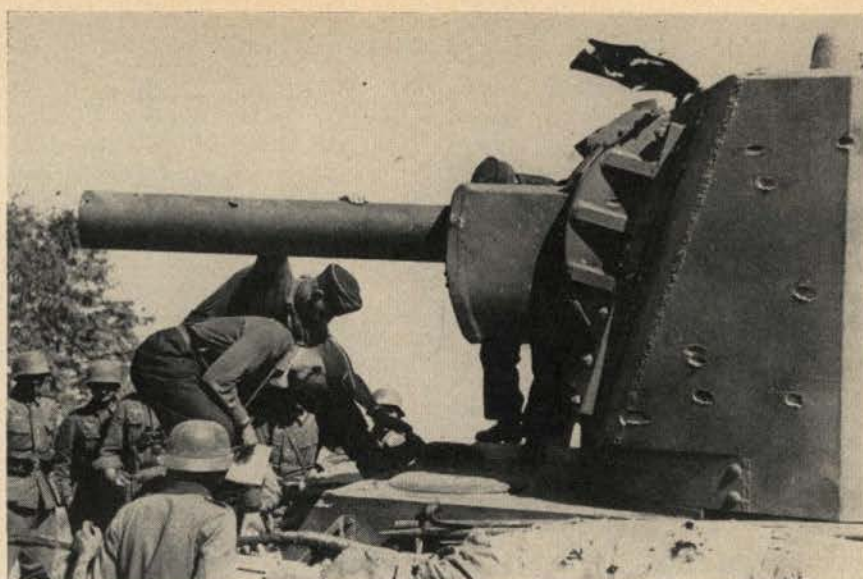
Though the SU's are now a prime piece of Soviet armament, and are handled according to doctrine as rigid as the Koran's, the fact is that they—and their doctrine—are like Topsy; they just grew. They did not spring full-armed from the brain of Generalissimo Stalin, complete with sets of Field and Technical Manuals to give the Word to the awestruck black-covered multitude. As in the cases of so many military developments within and without Russia, the SU's were the product of unforeseen wartime needs; of interne-cine strife and service empire building; of making the most of extant industrial capacity, and of a host of other factors—none of which could be



said to include remarkable foresight.

When armor was developing in the 1930s, the Soviets apparently thought that tanks—turreted tanks—should themselves provide much of the artillery-type support for shock action and mobile operations. To this end, they fitted their first “wave” of armor with cannon especially powerful for the day. In so doing they were merely following the concept worked out by the Western Allies in World War I, in that the Red infantry-accompanying light tanks at first mounted either a 37mm (later 45mm) gun or machine guns; their mediums, a howitzer of light field artillery gun caliber (76mm). Thus the infantry-accompanying T-27s of the 1931-3 period were merely modernizations of the original British World War I “male” and “female” tanks, and of the French light Renaults (which the Reds copied in 1920 as the Russki Renos). They just put infantry battalion (machine gun, and 37 or 45mm AT guns), or regimental (76mm howitzer) weapons, in armor. Nevertheless, it was thought that this armor would be able to drive through the “entire depth” of enemy positions, and take out hostile field artillery as well as infantry weapons. The 45mm gun was also the main armament of mobile warfare armor—of the BT’s of around 12 tons, with Christie suspension like the T-34’s. The job of the BT’s was to sweep through or around the enemy’s position, take out his artillery, his rear area installations—and, as part of the Soviet “armored division” of the day (the “Moto-Mechanized Corps”), effect entrapments. Of course, the Soviets also thought that attack aircraft would be able to take over artillery roles in mobile warfare—a fallacy which the Germans were also guilty of at the time. And, for that matter, America after World War II.

Although in the late 1920’s Germany’s Guderian (then a major) and America’s Chaffee (then a lieutenant colonel) foresaw the need for not just tanks and armored infantry—but for *armored forces* (including *armored artillery*), evidence is lacking that Soviet armor authorities had equal foresight. The Russians were going great guns in arming, and spending immense sums and industrial effort. Yet the only known at-



Presse Hoffman

A KV-II tank being examined by Germans whose 37mm AT fire only scarred it.

tempt at self-propelled artillery—as opposed to tanks—was the development of an SP 76mm howitzer. This SP was merely the infantry regimental cannon—the 76mm M1927, firing projectiles similar to the 76mm light field artillery guns—on a 6-wheeled GAZ-AA truck. The piece was mounted on the rear of this Russian Ford Model A; it had a splinter-proof shield attached to its top carriage, so as to rotate with it, like a naval destroyer gun shield. Since the 76’s 13.6-lb. shell was fired to a maximum range of only 9,350 yards, it was hardly an adequate armored artillery weapon.

Some of the prewar Soviet equivalents of armored divisions—the “Moto-Mechanized Corps”—had a battalion of 12 of these 76’s in each of their two “Mechanized Brigades.” Their real field artillery—two batteries of 122mm hows and one of 76mm guns—was truck-drawn, not SP or armored. It was organized in the Motorized Rifle Brigade. There wasn’t a medium (152mm) how or medium (107mm) gun in the whole outfit.

In fairness to the Soviets, it must be said that other military men then seemed to think that armored formations could get away with such seemingly inadequate artillery support. The contemporary U.S. 7th Mechanized Cavalry Brigade, up till the formation of the Armored Force in 1940, stuck to towed 75mm cavalry howitzers. However, it started out in 1935 with 2 battalions of 105mm gun-hows for artillery support (24

hows in all), hit France in 1940 with 12 150mm medium gun-hows added to their organic armament. True: the German artillery then wasn’t armored either, being towed. But the Germans intended that it should be armored, when their rearmament could hit a level which would permit it.

The Soviets, who were always far ahead of the Germans in arming before and during World War II, still have to establish that they even had a glimmer of appreciation of the need for armored artillery. That they didn’t is indicated by the fact that they never said that they wanted to armor their mobile troops’ infantry, artillery, engineers, or other components. Before, during, and after World War II, the artillery of mobile formations was towed by trucks in which the crews rode; the infantry was sardined into trucks or rode the tanks. These elements of the mobile arm were very definitely *motorized*—a term which seems to have meant to the Soviets (as it did in many armies before the war) *mechanized*. The tanks were the *armor* part of the mobile arm, the “Armored-tank and Mechanized Troops.” Outside of some British Lend-Lease Bren Gun (Universal) Carriers, the Soviets used no armored troop and weapons carriers until they showed off with great pride “armored transporters” in the 1951 Moscow May Day Parade. These are merely open-topped plated boxes on six-by-six ZIS trucks, reminiscent of that old lemon of pre-Pearl



Harbor days—the U.S. M3 Scout Car.

That the Soviets relied heavily upon direct-laid tank fires for armor's fire support is borne out by the Soviets' introduction of especially powerful armament in the wave of armor introduced as World War II began. The T-34 (which the Soviets claim was actually mocked up in March, 1937 as the T-111, or T-46-5), was armed with what was then a long 76mm gun—a tank gun proper. The T-34 was, and is, the prime "mobile warfare medium," and also the main infantry-accompanying tank. It represented a big change, with its 30 tons and 1.8-inch armor. The previous main infantry-accompanying tank (T-26), and the Christie BT mobile war tank, each had only a 45mm gun, armor around .59 to .87 inches, weight from 10½ to 15 tons.

But most peculiar—if the Soviets intended to rely on tank fires for armor action—was the lack of appreciation of fire efficiency shown in the T-34 layout. As in the T-26 and BT's, the turrets held only two men. The tank commander doubled as gunner, and was aided by a loader. His ability to pick up targets and observe fire was greatly restricted. The Soviets introduced and kept this turret, although by the end of 1938 (when the T-34 was being finalized) the German Panzer III's and IV's were out, with their three-man turrets with commander's cupola. Only after war experience did the Soviets change. They ended up with the present cupolaed 3-man 85mm gun turret, which came into service in 1944.

In contrast was the contemporary KV. This "heavy" tank mounted the same gun as the T-34, but used a four-man crew, with three in the turret—like the present U.S. Patton T48. Just why this slow-moving "breakthrough" tank (for assault on fortified positions) should have a good gunnery layout—and the "armored force" mobile war tank a bad one, so far remains a mystery. It is not that the Red technical devices (periscopes, telescopes, episcopes and other vision gear) weren't deluxe for the day. The appreciation of practical gunnery problems was just plain poor. The degree of the Soviets' lack of appreciation of the Soviets' problems can be understood only when it is realized that the T-34s (like the T-26's and BT's before them) were supposed to attack at *maximum speed consistent with terrain—and meanwhile take targets under fire without halting!*

The theory that Soviet armor intended to rely mainly on direct fires for support, and to furnish such fires with their own tanks, is further bolstered by the evidence of the KV-II—a modification of the 76mm KV. This tank had the hull of the 76mm KV, but mounted an Empire State Building of a turret, fitted with a M1938/40 152mm short tank gun 20 calibers long. The 12-ton turret caused an excessively high silhouette of 13.7 feet, as against 8 ft. 9 in. for the 76mm gun KV. It brought the weight up from 48 to over 57 tons. The projectiles were those of the corps artillery 152mm hows and gun-hows, but the ammunition could be

loaded fixed. Two men (for a total of six) were added to the crew to handle them. The gun had low velocity compared to the M1937 corps gun of the same caliber, but the Soviets say that the KV-II proved quite successful against the Mannerheim Line's permanent fortifications, against which it fired anti-concrete shells. Since the KV's were produced at the big Kirov Plant in Leningrad and were coming out in the latter part of 1939, the II's were ready for use in the late February, 1940 steamroller that ended that famous "Winter War."

If the KV-II's were a success in positional warfare assaults, they were a notorious failure in the mobile campaigns fought against the Germans in the summer of 1941. Right away the II's showed up all over the place—at least as early as the third day of the German attack (29 June) at Soposkinie in Poland. One KV-II nearly had the 6th Panzer Division of Hoeppner's Group on the ropes. Soviet armor counterattacked this division as the Panzer division was getting a bridgehead on the Dvina River in Latvia. A KV-II broke through without any infantry escort, and got among the division artillery. Nothing bothered its rhinoceros-hide armor. Even an antiaircraft 88 got potted, when its crew tried to get into position to knock the II off its stand on a key road. But since it just sat there and did nothing, the Germans soon got the best of this unsupported monster by guile—if not by fire power. A favorite method of neutralizing both the 76mm and 152mm KV's was to put an AT round through the gun tube: 37mm guns would hole that, though they'd hardly nick the armor.

What the KV-II's would have accomplished, if they had operated effectively as team with KV-I's or T-34's, must remain an unanswered question. They disappeared after the first summer of the German attack; they were never reported in action again.

### Tank Destroyers

When the German panzers erupted over Europe in 1939-40, a tremendous clamor arose for means to halt them. If the panzers were the acme of mobile war, many argued, then mobile antitank was the answer to



The SU-85 is a T-34 tank chassis and an M1939 85mm antiaircraft gun mounted.



them; only the antitank should be lighter and more mobile than the panzers, if it were to outmaneuver and gang up on the German tanks.

In America, this theory gave rise to the now-defunct tank destroyers, and the Tank Destroyer Command. Americans maintained that it was not the tank's job to fight other tanks—a concept abandoned after the war, when the Russian concept was adopted. The Russian concept has from the start been that a tank is the best tank fighting weapon (although now it appears modified in that an SU piece of armor heads the list of armor-fighters).

The 45mm gun armament of Russia's 1930's wave of tanks gave these tanks the same advantage of the German 20mm and 37mm armed Panzer II's and III's, as the same 45mm Rheinmetalls gave Russian infantry AT units over their 20mm and 37mm Rheinmetall-armed German opponents when it came to fighting armor. This advantage grew when the Germans continued to produce panzers with the same popguns, while the Russians in their 1939-40 wave of mediums and heavies went over to long 76mm guns. As for the advantage these new Russian tanks had over American models being introduced in 1939, it was positively phenomenal. The U.S. vehicles mounted nothing heavier than a U.S. version of the 37mm Rheinmetall. As late as the Louisiana Maneuvers in the fall of 1941—when the Russian forests and steppes were swarming with T-34's, the U.S. had in service just

two companies of the General Lee M3 medium, with 75mm in the right front of the hull (hardly well-positioned to fight armor). The characteristics of this Lee weren't even specified until 13 July 1940—after the German blitz of Flanders. At that they were dictated by the Infantry.

Since the Russians believed in tank-vs-tank combat, and had two excellently armed and armored tanks for the day (T-34 and KV), they don't appear to have been tempted to seek some cheap solution to the problem of battling German armored divisions on the prowl. Stalin knew that what he wanted was more tanks.

But he also depended upon towed guns—plenty of them, of which during the war he was ready to lose one per tank knocked out. These guns soon got to be organized in the greatest depth. There were corps and even army antitank pools, both to give depth to antitank defenses, and to thicken up organic antitank gun defense of divisions. The towed guns included "battalion" 45mm guns of 1932 and 1937 models; the 57mm of 1941 (comparatively heavy), and later of 1943 model—at which time it was mounted on the same tubular-trail carriage as the 76mm M1942 light field gun. This latter piece, like all Soviet field artillery light guns, was intended to double as heavy antitank. Until the M1942 went into super-mass production, the 76's available were the M1939 (with same tube as the M1942), the even more powerful M1936, as well as original Czarist 76's of 1902 and souped-up

ones of 1920/30 model.

These 76's (particularly the M1942, as it flooded the World War II Red Army) were organized in *tank destroyer regiments*. This confusing title was applied, although these units were only fully motorized. The regiments appeared within the Red mobile divisions—tank and mechanized "corps," and cavalry divisions; also in independent "tank destroyer" brigades, which often were part of artillery divisions. Such emphasis on towed antitank (and the use of the term "*tank destroyer*" for such towed units) has persisted to this day.

Organization of large independent pools of towed antitank, and dependence upon large well-fortified antitank "zones" to channel panzer attacks, was well established as the German 1941 offensives drew to a close. Such zones, the Russians found, could help them to dictate directions of German attack—thereby creating opportunities for Soviet armored counterattacks on flanks and rear.

A favorite use of the heavy KV—being slower than medium tanks both Russian and German, was in tank ambushes. Once hostile armor had been lured in, the KV's would attack from one or both flanks, with faster mediums helping to effect complete encirclement of hostile armor—if possible. Having at this time comparative invulnerability as well as heavy fire power, the KV's could afford to step in and slug it out with German armor.

Evacuation of many of European Russia's tank-producing facilities (Kharkov, Stalingrad, Leningrad), and the great tank losses to German armor in the first summer of the Russo-German War, brought about a shortage of both medium and heavy tanks—in the Russian view.

Hence the Russians did turn to "tank chasers" as temporary ersatz for well-armored and gunned armor. They had available as a tracked motor carriage the little Konsomolets armored tractor. This 4.4-ton vehicle had light armor, mostly on an armored box up front. This box housed the driver and machine-gunner (who had a standard 7.62mm DT gun in ball mount). On the rear over the gasoline 4-cylinder motor, it had two back-to-back benches, each seating a total of 3 men—with no weather



The SU-76, a lightly armored open top job, appeared in 1943, has been in Korea.





U. S. Army

The SU's are very much like this U.S. 100-ton T28 heavy tank built in 1944.

protection other than a canvas hood.

The idea was roughly that of the successful French Renault chenillette: the Konsomolets would tow heavy infantry weapons (45mm guns and 76mm infantry cannon) with their limbers, ride their crews. When the pieces went into action, the tractor would run back and forth on resupply missions—secured by its armor from small arms fire and artillery fragments. It could make 26 m.p.h., compared with 32 for a T-34.

Sometimes the Soviets made a fully armored tank destroyer out of the Konsomolets by mounting the standard 45mm tank gun turret (of the 1930's wave of tanks) on the rear. TD's of this type certainly must have been unsatisfactory, for that turret was intended for tanks of at least 10 tons. Such TD improvisations were captured by the Germans and Finns when they overran Viipuri, in retaking the Karelian Isthmus the Finns had lost in 1940. Another Konsomolets TD version mounted the M1941 57mm gun, just behind the crew compartment. This type was noted for resisting the German drive to Stalingrad and the Caucasus in mid-1942. Having only the normal gunshield, the gun crew had very unsatisfactory protection even compared with contemporaneous German SP antitank improvisations.

The Soviets made use of other similar improvisations, pieced together from odds and ends of matériel captured when they took over Poland and the Baltic states in 1939-40. None were regarded as at all sat-

isfactory. They tried out a KV-II with an 85mm gun replacing the 152; this may never have seen action, for the Germans never reported it.

The Lend-Lease matériel ordered at this time from the U.S. wasn't considered satisfactory either. The Russians took 650 of the SP 57mm gun T-48—a 57 on an armored half-track. They took 52 of another early U.S. "TD," the M10, using an M4 Sherman chassis and an adapted 3-in. AA gun. By the time the 76mm M18 came along, the Reds were no longer interested in U.S. "TD's"; took only 5 for tests. These U.S. TD's were not, like the heavy Russian SU's, completely armored in.

However, the Russians did go in for a very widely-used SU which was both lightly armored, and open at the top. This was the SU-76. It mounted the gun upon which the Russians placed the greatest production emphasis—the M1942 76mm light field artillery piece. The chassis was that of the T-70 light tank. The T-70 belonged to the light tank class, which was supposed to be built insofar as possible from commercial automotive components. Hence the SU-76 used the T-70's two coupled water-cooled straight eights for motive power. These were nothing but Russian pre-World War II versions of the Hudson 110-HP passenger car engines. Like the T-70, the SU-76 violated late Soviet armored vehicle design practice, in that it had the drive sprockets and transmission up front. It also used gasoline instead of Diesel power. As with simi-

lar German motor gun carriages, in the SU-76 version of the T-70 tank chassis the driver, engine, and fuel tanks were all moved up front, so the gun crew could stand on the bottom of the rear of the hull. This arrangement kept the silhouette down to a little more than that of the T-70 tank. The overall length was greater, an extra bogie being added to the suspension.

The armor was of simple thin welded plates—no castings. Frontal armor ran to 1.38-inches, with only .39 to .63 inches on the sides. While the driver's compartment and engine had an armored top, the fighting compartment for the gun crew was open on the top, and in the rear from waist height on up—again like similar German SP antitank guns. In an early version of the SU-76, the rear had two folding plates of armor, which provided both access and protection as high up as the sides and front. On this version, the radiator was located over the track on the right side center—instead of to the right rear, as on later models.

The SU-70 from the start mounted a practically unchanged artillery 76, with the characteristic German-type double-baffle muzzle brake of the M1942 model. The gun was served by a crew of two, the gunner being to the left (in normal field artillery position). There he had field-artillery type on-carriage fire control: Schneider 1917-type range quadrant and mount graduated for various projectile types as well as in meters, and a panoramic for the panoramic telescope, the head of which protruded above the compartment armor. The only noteworthy change over the towed artillery 76 was that the gunner had both elevating and traverse wheels to hand. In the SU-76 the "chief of section" doubled as SU commander; he stood at the right, where he had a standard tank-type episcopes to observe targets and fire, and could work the radio—the buggy whip aerial of which was mounted on the outside right. He also had a vision port in the frontal armor; the gunner another episcopes. The gun itself wasn't rebuilt for armor use; its vulnerable hydro-pneumatic recoil mechanism was protected by a large welded armor casing.

From many aspects, the SU-76 was a poor makeshift as a tank de-



stroyer. The fire control gear, the armor layout and thickness, and the speed (which ran under that of a T-34, and of the Panzer III and Panther—and was about that of a Panzer IV), all were against the SU-76. But it seems to have been a matter of capitalizing on available production facilities, especially after the T-70 tank proved a failure and was dropped completely from production in the fall of 1944.

The SU-76 actually appeared in 1943, at the same time that the Germans were coming out with similar re-designs of their by-then-obsolete light tank chassis (to be used as anti-tank and infantry cannon motor gun carriages). During 1942, the Soviets did not do as did the Germans, and produce or adapt great numbers of light tanks as tank destroyers simply by slapping shielded guns atop the un-redesigned tank chassis. This apparently was for very good reasons: the Soviets had lost immense numbers of their old tanks, and they didn't want to waste precious production facilities on such poor adaptations—which would have had too high a silhouette in addition to being relatively slow and highly vulnerable to many types of weapons.

By the time the SU-76 was out in numbers, the Soviets had gained the strategic initiative; they were on the offensive. The call was more for an infantry support weapon than for tank destroyers. Moreover, since the

German 88mm Tiger and super-long 75mm'd Panther were also out (as well as a Panzer IV with a powerful 75) by the time the SU-76 was, the SU-76 lacked any advantage in firepower over the then common German tanks. In order properly to engage contemporary German armor, the 76's had to use super-velocity "arrowhead" shot—what is variously known as armor-piercing subcaliber, or HVAP. With 76's, this meant holding fire for relatively short ranges and sure kills—say, 550 to 440 yards. Hence it was natural that the SU-76 was often relegated to infantry-support roles—which work it has done in Korea as well as in the postwar Soviet forces, however ill-fitted it may be for the job.

Even on the Soviet side, the SU-76 was outclassed as a tank destroyer before birth by the SU-85—the M1939 85mm antiaircraft gun, mounted low in the front plate of a turretless T-34 tank chassis, like most other SU's. Appearing during the summer of 1943, the SU-85 frankly took after the line of German assault guns. The previous summer these German assault guns had developed to combine both infantry direct support and tank destroyer functions, thanks to the substitution of a high velocity 75 for the older short 75 of 1940. With the SU-85 and the slightly later German *Jagdpanther*, German and Soviet design coincided remarkably: both vehicles had a

smooth sloping front plate and sloping side, and a lower silhouette as well as a larger gun than the turreted tank version of their basic chassis.

The Soviets have stated that for antitank and assault-gun infantry support work, they preferred and prefer the SU's lower silhouette and larger gun. The silhouette affords greater security through concealment—enabling surprise action. It also offers less target in armor-vs-armor fights, and less of a target to lay on at maximum ranges. The gun affords greater hitting power at those maximum ranges, as well as more devastating HE effect against infantry weapons.

In this the Soviets go down the line with the view of the older German arms—the Infantry and Artillery, although not with armor leaders like Guderian. Like the Americans, these tanker Germans have preferred turreted tanks to assault guns, since the latter's limited traverse and lack of mobility to secure all around fire renders them unfit for use within enemy positions on their own. The assault guns absolutely require infantry or tank cooperation.

It will be seen how the Soviets in general have followed these principles in their design and armament of SU's and turreted tanks.

Unlike the SU-76, the SU-85 was a proper piece of armor. The crew of four was lodged together up front, in a completely armored-in box. The armor was roughly that of the T-34 hull—a little less than two inches. The re-designed 85mm M1939 flak gun hadn't any recoil mechanism protruding forward of its ball mount (which gave it only a few degrees traverse); nor had it any muzzle brake.

The SU-85 was usually organized in artillery "regiments," of which the mobile troops—the Tank Corps and the Moto-Mechanized Corps—had one each. The term "regiment" makes the array of SU-85's sound more formidable than it was. Actually there were only 20 of them (two companies per "regiment") plus a T-34 command tank. They supported the tanks as do the SU-100's today, and fought armor according to the same tactics. And they had SU-152's to help out, too.

Although the SU-85's did yeoman service thanks to their mobility, and



The SU-100, a medium tank chassis mounting a 100mm gun, fought in WW II.





Sovfoto

The SU-100 gun is powerful and has high velocity. It is the Red armor-fighter.

held the edge in gun-power over the most common German assault gun-tank destroyers, the SU-85's were from the start outclassed by the heaviest contemporaneous German tanks and assault guns. The 88mm gun Tiger tanks (which first appeared on the Leningrad Front in November, 1942) had heavier armor for slugging matches; so did both the Panther tank and Jagdpanther assault gun which appeared the same year as the SU-85's. Luckily the German designs had bugs in them, and weren't pushed for such large-scale production as the T-34 chassis of the SU-85.

Morosov's creation of an 85mm turret for his T-34 soon doomed the SU-85. His T-34 with an 85 in its turret went into production in 1943—the very year the SU-85 was going into action. The T-34/85 itself went into action in the Spring of 1944, although up to the end many T-34 76's were made and used. The primacy of the SU-85 as a tank destroyer was also eclipsed by the development of the KV heavy tank into the Joseph Stalin series. For Kotin wasn't satisfied with an 85mm KV, which went into production in the Spring of 1943. That very year he obsoleted that tank development by radically altering the KV into the 122mm Stalin.

With the 122mm Stalin (its gun adapted from the corps artillery 122), the Soviets had a tank which regained

both gun and armor supremacy from even the best new German armor. It was natural, then, that the heavy-gunned and armored JS should take over not only heavy-tank "break-through" roles against fortified positions, but also the over-watching fire and antitank missions of SU's. However, the Stalins remained in pools to beef up divisions when they were needed. The SU-85's remained the organic light assault artillery of the mobile divisions—the Tank Corps and the Moto-Mechanized Corps. They were faster, more mobile than the much heavier Stalins, which used the same V-12 Diesels.

With the advent in late 1944 of the SU-100, the tank-SU relationship was returned to that regarded as normal by Soviet-German concepts. By substituting the new 100mm gun (adapted from the prewar naval 100/56 high-velocity dual purpose gun) for the 85 of the SU-85, the SU version of the T-34 got far more firepower than its turreted counterpart. Thus in the T-34 series there was a T-34 turreted tank with 85mm gun, and an SU with 100mm gun. In the Stalin series, a turreted tank with a 122, an SU with a 152.

The SU-100 looks much like the SU-85. The long guns have no muzzle brakes, and the ball mounts are similar. The SU-100's commander's cupola, added to the left side of the crew compartment, is the main distinguishing feature. The cupola top

is the same as used on the T-34/85, as is the driver's hatch with its two vision ports.

As with the SU-85, the gun is laid with a tank-gun type telescope; no panoramic telescopes and artillery-type sights are provided. No machine gun is mounted, even for anti-aircraft. In this respect the SU-100's and 85's follow the T-34's. Close-in protection is afforded by a PPS tommy gun, which is the Russian version of the German MP 40 Schmeisser (of which the M3 "Grease Gun" is the U.S. adaptation). It can be stuck through pistol ports to the right and left of the 100mm gun, on the right side behind the cupola, and on the opposite (left) side from the cupola.

The SU-100 has always had both intercom sets and radio. The intercom was more necessary on wartime SU's than on the early T-34 medium tanks, for the SU-100 drivers were separated from the vehicle commanders. In the T-34 with 76, both commander and driver were on the left; the commander could use foot signals on the driver's shoulder. In the SU-100 and SU-85, the commander is off to the right; on the SU-76 there's the engine between commander and driver.

The radios were equally necessary for the SU's. Even the smallest units (platoons) have always been worked by radio, the platoon commander assigning targets and controlling movement of his SU's by that means. Radio contact with the supported tanks hasn't been so essential, though prescribed. Soviet practice has been for SU's to pick up for themselves the targets bothering tanks and infantry. Those which they miss may be designated by tracer fire from tanks, infantry, and direct-laid towed artillery accompanying the infantry and tanks.

To pick up such targets and to note visual signals, the SU-100 commander was from the start provided with a periscope in the front half of his hatch lid. Periscope and lid both rotate. There is another rotatable periscope in the left front half of the split hatch lid behind the driver. This periscope has been normally used by the gunner to observe his sector of terrain. His aiming telescope provides only a restricted field of vision, further limited by the very slight traverse of the gun.



These vision devices mark a big change to simpler devices for all-out wartime production. The earlier SU-85 had for the commander the type periscope used on the KV and early T-34 tanks. This was a complex device, replete with gadgets and graduations to aid in observation and fire control. The SU-85 also had fixed episcopes (armor hooded on the sides and in back) on the left and right sides, and on the right front. In this fitting the SU-85 also followed the 1939-40 wave of tanks. The SU-122 (how), SU-152, and SU-122 (gun) assault guns were similarly fitted. But with the Stalin and T-34/85 tanks, and the SU-100 and JSU series of 152 and 122 (gun) assault weapons, the switch was made to universal use of a very simple periscope as used on the SU-100. It replaced the fixed episcopes and the fancy periscope. The driver uses the T-34's driver's hatch with double episcopes. Since the periscopes are not edge-mounted like the episcopes, and don't stick up as high as the old periscope, the 100's appear relatively blind compared to the SU-85's.

Relative blindness is not the only apparent defect of the SU-100. It is obviously cold as the North Pole in winter. Crews were noted during World War II wearing Shubas—thick sheepskin coats. Also, the ear-flapped Army ersatz pile cap seemed to be preferred to the padded tank helmet for cold weather. Just how that cap could be worn with headphones is a mystery. The latter are built to button into the tank helmet ear flaps (not to ride on headpieces, over which a pile cap could be pulled). An additional discomfort must be the trouble from powder fumes, when the breech is opened. A double-domed ventilator vent was fitted to the rear of the cupola (with slots in the sides, and dimples on the top); but during the war there was no forced evacuation of fumes.

The exterior of the SU-100 has normally carried on each side towards the rear the extra two fuel drums so characteristic of the T-34. Night marches can be illuminated by a single auto headlamp mounted on the left over the track. Seven extra track links usually have been bolted on front, along with a long wire towing cable. In action, the rear of the chassis behind the crew compart-

ment was usually piled with wooden ammunition boxes, and bags of gear for the crew. The short buggy-whip aerial may be folded to the rear along the side, getting mixed up with this junk. Observers may therefore wrongly conclude that such a bedecked SU-100 has no radio.

The main defect of the SU-100 is not apparent from the outside. This defect derives from the Soviet attempt to combine a big, hyper-velocity gun (capable of vieing with the 3,000-ft. sec. muzzle velocity of the 88mm Pak 43), firing a large and easily-spotted shell of around 35 lbs.,—with a fast medium tank chassis, fair armor, and low silhouette. The

of the T-34/85) SU-100. The latter thus has the advantage in speed and lightness of foot.

These are among the obvious reasons why the SU-100 has become the main Soviet armor fighter. The Soviets like its gun-power, its low silhouette, its mobility, its armor (only slightly less than that of the turreted T-34 tank on the same chassis). The silhouette deserves emphasis, for even more than the Germans the Soviets have insisted on the tactical advantage of lowness. They say it enables easier concealment, use of cover; hence enables both greater surprise and security—offers a target hard to hit, compared to a tank.

These SU-100's, which represent the acme of Soviet wartime antitank development, today are to be found teamed with T-34/85 tanks in rifle divisions. It is proudly displayed in the main Soviet shock outfit—the Tank Division (formerly Tank Corps), and in the armored blitz mass of the old-line Soviet mobile warfare outfit—the present-day Mechanized Division (formerly Mechanized Corps). Naturally, it is also available for assignment to that division's infantry components if needed.

But while the SU-100 has displaced the SU-85, it has not displaced the Stalin. Those formidable tanks are mixed in right with the other prime armor fighters. The SU-100's and Stalins actually have been teamed in exploitation of breakthroughs and in pursuit of an enemy. Points have been composed of a platoon of the SU's, to a platoon of Stalins—as nasty a hand of two pair of armored aces, as a Soviet opponent could well meet in any meeting-engagement game.

Americans who have been greatly heartened by the performance of their armor in Korea should bear in mind the formidable SU's—and their use in Soviet tank-SU teams. The powerful SU's have never been used in Korea, nor has the tank-SU team. The only SU encountered there has been the makeshift, weak-gunned SU-76, which usually it has been used in its post-World War II infantry-accompanying gun role. Stalin definitely has been keeping up his sleeve what he appears to consider his armored aces—which include the great JSU-152's, as well as the Stalin tanks and the SU-100's.



thing that had to go (as in all Soviet SU's) was ammunition stowage—which is very slight.

Nevertheless, the SU-100 has several advantages as compared to the Stalin (which as to ammo is even worse off). Its 100mm gun was adapted from a successful prewar Navy piece, designed for very high velocities and for rapid fire. The Stalin's 122 was adapted from a corps artillery piece, designed for slower fire—and with semi-fixed ammunition harder to handle and yet not as powerful as the 100. The big 122 has a muzzle brake, which the 100 does not. And while the Stalin can get around nicely despite its 50-ton weight, the fact remains that the same Diesel has powered both it and the much lighter (around the 35 tons



# The ArtilleryMAN is the Thing!

by MAJOR EUGENE V. BRIGHAM

**A** NUMBER of articles have been published in various service journals expounding the merits of armored artillery. This type of artillery is very versatile. However, I feel it is a weakness of these articles that they consistently compare the armored artillery with towed artillery to the general disparagement of the towed type.

It seems to me that the weakness in the statement of the case lies in the inclination to stress certain characteristics of equipment while failing to place enough weight on the man operating it. Examples supporting armored artillery imply almost without exception that the only reason towed artillery has been overrun in combat is because it was towed rather than self-propelled. I do not think that is true.

The net result of disadvantageous comparison of the towed artillery with self-propelled has been to inspire among many young artillerymen the profound hope that they will never be assigned to a towed outfit. This in turn might well affect efficiency in towed units.

Lt. Colonel Leon F. Lavoie's article on this subject of towed versus self-propelled artillery (*ARMOR*, September-October, 1952, page 10) was highly interesting. Yet, it appears to support the thesis that the primary reason for the overrunning of several of our units in Korea was

because it was towed and was, therefore, more difficult to handle and maneuver. The article brought out many of the advantages of self-propelled artillery, about which this writer is equally enthusiastic, along with the tactics used by the Red forces and the defenses and tactics required to defeat them. There are examples of SP units in action. But this is only a part of the story, one side of it.

For example, the 61st Field Artillery Battalion and its sister artillery units in the First Cavalry Division acquitted themselves most creditably in Korea. The 61st, a towed unit, was hit several times and on each occasion turned in a fine job and came out of the fight with a minimum number of casualties and minimum loss of equipment.

On one occasion, for which a Distinguished Unit Citation was received, an estimated regiment of Chinese Communist troops attacked the entire 61st Battalion, and succeeded in penetrating to within 100 yards of the perimeters of the individual batteries, attempting to cut off and destroy the battalion and set up a road block behind friendly forces further to the north.

Each battery deployed all available personnel as infantry in a tightly knit area defense. The gun crews were left intact to service their howitzers. By means of direct fire by the howitzers, supported by all small arms and automatic weapons available, the battalion stood off the Reds for six hours. In addition to maintaining its own integrity and accomplishing a final withdrawal in an

orderly manner, the battalion contributed substantially to the larger action of friendly forces.

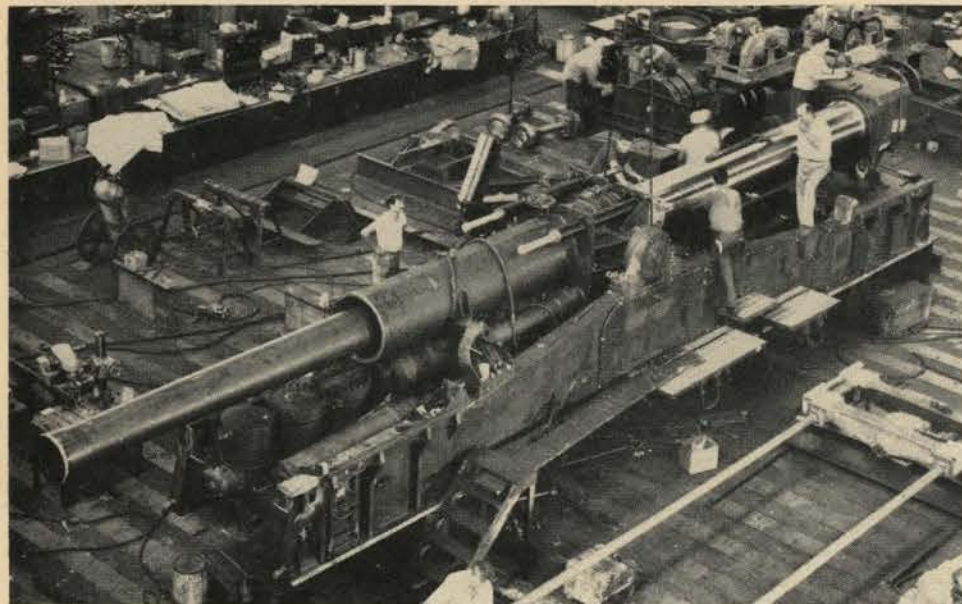
The success of any unit in action, whether towed or self-propelled, in the final analysis is due to training, discipline, *esprit de corps*, an adequate and planned defense, and forceful and competent leadership. The 61st had all of these. It had carried on an intensive training program coincident with an intensive combat employment. In addition to the normal training for a field artillery battalion, such things were covered as emplacement of outposts and main defenses; warning systems; coordination of defenses between batteries; proper emplacement of automatic weapons; scouting and patrolling and the defense; and other infantry subjects. The results were assured. Any battalion, whether towed or self-propelled, can do these things.

Even though towed artillery is somewhat more difficult to handle and is somewhat less mobile than SP, with proper preparation in all respects no enemy will overrun it, and if a withdrawal is necessary it can be executed under enemy fire with minimum loss of personnel and equipment.

As with SP artillery, towed has many capabilities. Unless they are brought out and recognized we may place a psychological weight against towed artillery which will create a lack of confidence in our artillery personnel assigned to towed units, who need only be assured that it is not the gun that does the job, but the man behind it.

Major Eugene V. Brigham, Artillery, served in Korea for fifteen months with the 61st Field Artillery Battalion, First Cavalry Division. He is now Army Advisor with the 696th Armored Field Artillery Battalion, Trenton, New Jersey.





Dravo Corporation

The 280mm gun under production at the Pittsburgh plant of Dravo Corp. The 38½ foot carriage requires 8200 feet of welding. Nearly 2200 separate blueprints govern its assembly. Accuracy of machining is held to one-thousandth of an inch on critical dimensions.



United Press Photo

A complete battery of atomic artillery consists of two 280mm guns and nine supporting trucks. One of these is a shop truck, while two tow the generators which supply power for the gun operations and four tow conventional trailers. A captain is battery CO.



United Press Photo

Boasting complete mobility, the 280mm unit, weighing 85 tons, can travel up to about 35 mph on the road and, for its weight and bulk, can negotiate rough terrain. It can cross present Army division-load bridges and will fit into an amphibious landing ship.

## The Army's ATOMIC GUN

The United States Army recently unveiled its new atomic artillery piece, a 280mm gun designated the T131. In a special presentation demonstration at Aberdeen Proving Ground on October 15th, Army Ordnance Corps personnel put the formidable piece of military equipment through its paces for a distinguished observer group which included Secretary of the Army Frank Pace, Jr., and Army Chief of Staff General J. Lawton Collins.

A battery of two guns was moved from a wooded area over typical terrain to the demonstration position on an Aberdeen range. Crews took the battery from march formation into firing position in 20 minutes. Conventional ammunition was used. Atomic shells will be fired in tests still to be announced by the Army. Both Secretary Pace and General Collins emphasized that this gun was only a part of a broad program of atomic weapons development.

The new gun is a product of the Army-industry team. Some half-dozen Ordnance installations in as many States and a like number of prime contracting firms have contributed to the project from design through production. With guns now in being, Field Forces and tactical testing will enter the picture. Meanwhile, a new Combat Development Agency has been set up at Army Field Forces to co-ordinate the testing, organization and doctrine.



U. S. Army

Detached from its transporters, the gun rests on a turntable where a socket and ball arrangement allows balance and a 360 degree traverse. Three jacks with wheels riding a track around the turntable provide ease of traverse and levelling for uneven terrain.



United Press Photo

Projectile and powder charges are loaded into the breech by means of a hydraulic power rammer. This operation may also be done by hand. Elevation is 0 to 55 degrees.



U. S. Army

The range of the atomic artillery gun is "about 20 miles." It can deliver an atomic shell on target in all kinds of weather, day or night, unlike the air-delivered atomic bomb. It is considered four times more accurate than conventional artillery at longer ranges.



# The New Armored Division Organization

by MAJOR GENERAL BRUCE C. CLARKE and  
BRIGADIER GENERAL L. L. DOAN

**T**HE activation of the 1st and 2d Armored Divisions in 1940 molded the Infantry tanks, Mechanized Cavalry and supporting arms and services into what was to become a new Force and later a new Branch—Armor. A few old-timers will recall that the early armored divisions were organized on a basis of three tank regiments and one armored infantry regiment. Two of these tank regiments were "light" tank organizations, officered principally by Cavalry officers, while the one medium tank regiment and the armored infantry regiment were officered principally by Infantry officers.

In January of 1942, the armored divisions were reorganized, eliminating the medium tank regiment. Within the two remaining tank regiments, light and medium tanks still were grouped separately in battalions in the Table of Organization, but later all tank battalions included one light and three medium tank companies. During this period both regimental and combat command headquarters were in the TO&E.

Another concept of organization was adopted in 1943. The regimental organization was abandoned and the "Light Armored Division" organization was adopted. In the light division all battalions were separate battalions. The battalion sections of the headquarters and maintenance companies of the old regiments which supported the battalions in combat were now included in the battalion organization. Each battalion was provided the means to take care of its own adminis-

trative and second echelon service support. Combat command headquarters were retained as a tactical headquarters but did not include means to provide any administrative support for the battalions. Assignment of battalions to combat commands was not fixed, permitting the division commander to move battalions from one combat command to another as the situation might require.

During World War II the 2d and 3d Divisions remained "heavy" divisions with the regimental as well as the combat command organization. The remaining divisions not originally activated as "light" divisions were reorganized so that by the end of 1944 there were two heavy divisions and fifteen light divisions, including the 1st Armored Division. A regiment of infantry borrowed from an infantry division and extemporaneously motorized was usually attached to each of the heavy divisions to provide them the additional infantry they needed. Thus the so-called heavy divisions became very large in practice.

In 1946, an Armored Conference was held at the Armored Center at Fort Knox, Kentucky. This was attended by nearly all of the wartime division commanders, as well as many other officers who had armor experience during World War II. The findings and recommendations of the European General Board provided the principal problems for consideration at the Conference. The Organization Committee presented the standardized reconnaissance battalion organization we now have and recommended other changes in the light armored division organization. It also presented to the Conference the necessity for a decision as to the future organization of the armored division—would the regimental organization be retained or would the light division, as modified, be adopted as standard for all armored divisions? A factor bearing on the

problem was prior decision by the Chief of Staff that the division would not exceed 15,000 and the habitually attached elements of World War II would be organic.

Recommendations as finally approved by the Chief of Army Field Forces and the Chief of Staff led to the adoption of the combat command-separate battalion principle. TO&E 17-N was prepared and submitted to the Department of the Army. The TO&E approved by the Department of the Army is the armored division we have today.

Although the 2d Armored Division was reorganized when the new TO&E was approved, this organization had never been completely assembled and tested in a full-scale maneuver in the United States. The 1st Armored Division, reactivated in March 1951, is the first armored division to complete a full cycle of training, to carry out full-scale division tests, and then to participate in a large-scale joint maneuver as a part of a "type field corps." The division was used in both defensive and offensive roles. In every phase, the present concept of organization was proven to be sound.

The OCAFF Panel on Armor in 1949, established the need for the armored division in the type corps organization. This Panel said:

"The Armored Division is a complementary and coordinate organization to the Infantry Division. It is built around tank units as the main striking element. Its concept of organization differs from the Infantry Division's in that in the Armored Division all other arms or elements exist and dedicate their efforts to serve the

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*Although we have had plenty of opportunity in Korea to battlefield-test the organization of our smaller armor units, the testing of our armored division organization has been limited to maneuvers. Here is an important analysis by two armor experts of the current organization of our major mobile instrument*

interest of the tank formations. It is an organization of tremendous shock effect, having high tactical and strategic mobility. It aids the Infantry Divisions in advancing the line forward by deep penetrations, without regard to exposed flanks, in order to strike deep into the enemy's vitals, thereby paralyzing a large section of the front holding up the advancing infantry formations. In the defense it aids the infantry in maintaining the continuity of the line by adding depth to the battlefield, counterattacking, destroying enemy armor, and making counterthrusts.

"Working together in the corps framework, supported by corps units, these divisions constitute a powerful offensive and defensive team. So teamed together they provide an economical, flexible organization."

The armored division is designed to fight primarily in two flexible, organized combat commands. Each is commanded by a senior officer who has a staff adequate for handling operations in fast-moving situations and trained to work under mission-type, fragmentary orders. The third, or reserve command, normally provides the means for rotating battalions into the other two combat commands so that maintenance and rehabilitation is a continuous process in combat. When circumstances require it, the reserve command may be used as a fighting force for short periods of time.

In Exercise LONG HORN the first mission assigned to the 1st Armored Division was that of acting as the covering force for the corps in a withdrawal. The division was to have relieved one of the infantry divisions of the corps across a front of some thirty-five miles. The 1st Armored Division's plan was to employ both combat commands and the reserve command abreast with one or two reinforced tank battalions held in division reserve and the reconnais-

sance battalion utilized to protect flanks and the rear areas of the division, particularly against airborne attack. Unfortunately the play of the problem was such that the 1st Armored Division was forced on the defensive in their originally assigned assembly area and had no opportunity to put the plan into effect. A similar disposition to that outlined above did exist in the assembly area, however, and was successful in defending the assigned area. No Aggressor unit larger than a platoon was able to make any penetration nor was any 1st Armored Division company or larger unit surprised or overrun by Aggressor at any time. The new armored division has great capabilities in a defensive role because of its power, mobility and communications.

In the offensive phase, higher headquarters directed that the division advance in two widely separated zones. On the left, one combat command, consisting of a tank battalion, an armored infantry battalion, an armored field artillery battalion and an armored reconnaissance company, supported by an armored engineer company, an armored ordnance company and an armored medical company, and with an infantry regiment from one of the infantry divisions attached, constituted the south force. On the north, the division, less the combat command on the south and with another infantry regiment attached, initially planned to attack with CC "A," which included two armored infantry and two tank battalions as its main striking force, supported by the reserve command and the remaining division troops. However, intelligence indicated early that the Aggressor was deployed in a thin line with little reserve, so the reserve command was brought up in the interval between CC "A" and CC "B" and assigned an axis of advance parallel to CC "A." Since this was to be a short

maneuver, the reserve command was committed at every opportunity for training. The reconnaissance battalion was used to maintain contact between the north and south forces and to protect the flanks. The attached infantry was used to seize bridgeheads and to organize key terrain as successive phase lines were reached. The plan contemplated that the reserve command would revert to a reserve role after bridgeheads were established across the Colorado River, which was the division's final objective.

During the Division Tests preceding Exercise LONG HORN and during the maneuver, several changes of formation assignments of units to combat and reserve commands were made. The organization of the division proved to be as flexible in practice as it was in theory and these shifts were made expeditiously and without confusion, even during periods of radio silence and in blackout. On one occasion all battalions were moved to new combat and reserve commands during a night withdrawal without difficulty or incident.

The signal communications in the division were excellent throughout the maneuver. By habitually locating combat command and division command posts on high ground, continuous FM radio communication was maintained. CW radio was used for intelligence and administrative channels, permitting FM channels to be used exclusively for operations and command. Heavy use of about 25 FM radio nets by umpires caused trouble, but neither they nor the Aggressor jamming equipment were able to blanket out our FM radio communications. Simple map coordinate and voice codes were used on the FM channels.

The supporting elements of the division all proved reasonably adequate to perform their missions. Such changes as were recommended follow-



ing the maneuvers were generally minor recommendations concerning equipment. No changes were suggested to be made in the basic organization of any of the supporting units.

The division artillery considered its organization as suitable and adequate to accomplish its missions. As might be expected, in armored action, the artillery defended itself against Aggressor tanks and other elements by direct fire in several instances. Throughout the maneuver, the artillery units advanced as rapidly as the tank elements and were able to provide continuous artillery support.

The bulk of one armored infantry battalion was equipped with the T-18 armored personnel carrier. These vehicles were received just as maneuvers began, so that little preliminary training was possible. These vehicles proved to be more mobile than any other vehicle on the battlefield. They accompanied the tanks in the assault in numerous cases, delivering their cargos of infantrymen on the objective immediately behind the tanks. This close follow-up placed the infantrymen at the critical points at the most critical time so that they were able to take full advantage of the Aggressor confusion caused by tanks overrunning them. With their overhead cover, the armored infantrymen were protected from both their own and enemy proximity fused artillery fragments; and had there been tactical atomic bursts, they would have been protected measurably from the blast and other effects. The armored personnel carrier proved to be a very suitable vehicle for the armored infantry. Infantry soldiers admitted that while riding in them there was a high noise level and vibration; nevertheless, they expressed emphatically their preference for the armored personnel carrier to the half-track for moving rapidly in the assault. A few changes will enable the armored personnel carrier to fill its place in the armored division tactical team.

The heavy tank battalion is organized into 3 tank companies of 4 platoons each—22 tanks per company. This organization was adopted to make the heavy tank company and battalion the same wherever found and was the organization desired in the infantry division. The 4 Com-

pany-3 Platoon organization would be preferable in the heavy tank battalion, armored division. The heavy tank unit in the division has been trained and employed in exercises and maneuvers to operate generally in company-sized units attached to combat commands to over-watch and back up the medium tanks. The "family of tanks" concept is well exemplified and is economical and effective in the new armored division organization.

In the armored engineer battalion we still lack a suitable assault bridge. Development and standardization of a scissor-type bridge transported on an armored vehicle which can quickly bridge up to a 30 to 35 foot gap under fire is urgently needed. Availability of this type of equipment might result in some changes in the organization of the armored engineer battalion, but these changes would not be significant. The tactical concept of employing units of the division requires such equipment.

#### Supply Requirements

In the quartermaster battalion, consideration must be given to the problems that are arising as a result of the increasing weight of our guns and vehicles. Ammunition and POL requirements are rising rapidly. Perhaps the best solution will be to go to a larger-capacity truck for cargo use rather than increasing the number of trucks in this battalion.

One more important aspect of the maneuvers was the atomic warfare play. Although completely theoretical, it was obvious that Armor is a branch of the service well adapted to atomic warfare. It has a large measure of protection for the individual constantly available. Armor mobility and communications permit it to operate over a widely dispersed area. Its communications permit complete control, even though widely dispersed, and its mobility permits rapid assembly to employ mass when needed, with subsequent rapid dispersal after the mass has been employed. Again, its mobility and protection for its personnel make it a most suitable force for rapid exploitation of our own tactical atomic attacks.

During Exercise LONG HORN, the 1st Armored Division was the only division which did not receive a theoretical atomic attack. This was

because its mobility and communications permitted it to remain so widely dispersed that it did not at any time provide a profitable target. In addition, the division staff was split into two parts so that if Division Forward had been hit, staff officers at Division Rear were continuously briefed and prepared to step into the key spots under the Chief of Staff, as temporary Division Commander. This split placed G-2, G-3 and the Division Commander in an operations group forward and the rest of the staff under the Chief of Staff in a logistics group in the rear. An additional advantage of splitting the headquarters was gained in that the number of vehicles with the Forward Command Post was reduced by half. This permitted the Forward Command Post considerably more freedom of movement and reduced the area needed to set up the Command Post. As a result, the Forward Command Post moved frequently and was able to maintain continuous communications with its major commands. In retrograde movements the Division Commander could leapfrog from Forward CP to Rear CP and be in continuous control forward and in contact with Corps.

Last, but far from least, is the Army Aviation Section of the division. The light planes were employed throughout the daylight hours to provide continuous air cover for the division. They provided prompt and continuous information of Aggressor movements. Through their radio reports, which all commanders monitored, they were kept continuously informed of the front-line situation. They performed an invaluable service to the division. They fill a vital need both on offense and defense.

In summary, the current organization of the armored division fulfilled every expectation. The concept of the organization has proved to be sound. The combat command-separate battalion principle permits the commander full freedom in his choice of composition of forces to meet the changing situations. Every unit of the division, from the quartermaster bath unit and the replacement company on through the major commands, justified their place in the organization. The basic design of the division is well abreast of the modern broad-front, fluid-situation, tactical-atomic-weapon type of warfare.



# ARMOR ASSOCIATION NOTES

## Executive Council Meeting

Armor Association members will be interested in a number of matters which were discussed at a special meeting of the Executive Council held on September 18th at the Army and Navy Club in Washington, D. C.

Primary purpose was to lay plans for the 64th annual meeting of the Association. The tremendous success of last year's meeting set the pattern for the coming event. Fort Knox and the Home of Armor were selected as the site. The date is January 30th, the fifth Friday of the month.

A Nominating Committee composed of three members was appointed to prepare a slate of proposed candidates for the governing body for 1953, to be presented to the membership at the annual meeting.

Another item of discussion was the move of Association headquarters from 1719 to 1727 K Street, N.W., in Washington. The old building has been torn down in favor of providing additional parking space in our desirable section of the Capital city. The new space next door at 1727 K Street, the entire 3d floor, is a more practical setup and more appropriate for our fast-growing organization. The move was made on September 30th.

A forthcoming change in Secretary-Editorship was reported with the assignment of Major William H. Zierdt as Associate Editor. Effective with this issue of ARMOR, he takes his place on the staff and the masthead.

Also discussed at the special meeting was the annual ROTC award made by the Association, an engraved certificate presented to the outstanding senior cadets at the 14 institutions with Armor courses. Some discussion had been reported favoring a medal award, since Infantry and Artillery cadets were receiving this type from their Associations. The Council decided to continue the certificate as being suitable for display by the recipient. It was felt that there was no obligation to follow others in presenting a medal, which was an expensive item not authorized for wear with the uniform.

Also considered was the establishment of Council Advisory Boards for

the Far East and European Theaters, to serve as extensions of the Executive Council. Association Chapters were considered and it was decided to put this to a limited tryout.

The Council also reviewed developments attending the reopening of the subject of a merger of the Armor Association and ARMOR, still desired by the Association of the U. S. Army and its *Combat Forces Journal*. Lieutenant General Geoffrey Keyes, Chairman of an Armor committee, reported upon developments resulting

from several meetings with representatives of that organization and the Antiaircraft Association. A full discussion of the entire history and background of the subject led to the unanimous views expressed editorially elsewhere in the magazine.

Nineteen officials of the Association were present at the Council meeting, representing the top level of the mobile warfare field. The entire membership can well be proud of the attendance and guidance of the distinguished governing body.

## Armored Division Associations Support Armor Association

*Over the course of the last six months a number of the Armored Division Associations, organizations of veterans who served with the various divisions during World War II, have been holding their annual reunions around the country. Out of the many gatherings have come strong expressions of support of the U. S. Armor Association, in the form of resolutions passed at the respective division association business meetings. The Armor Association has received copies of these resolutions from a number of groups, including the 1st, 5th, 6th, 7th, 10th and 11th Armored Division Associations. The resolution passed by the first of these is presented here as an example of inspiring support:*

August 30, 1952.

To the Editor of ARMOR:

WHEREAS the highly specialized art and science of modern armored warfare has developed its own unique requirements of tactical theory and doctrine, and

WHEREAS the only existing professional medium for the continuing exposition, development and current study of armored theory, technique, and philosophy is the periodical publication of the United States Armor Association entitled ARMOR, and

WHEREAS the superior editorship and professional excellence reflected in the pages of ARMOR has won that publication international renown and acceptance as pre-eminent of all military publications devoted exclusively to the advancement and perfection of the art and science of mobile ground warfare, upon which the effective defense of our nation so largely depends;

NOW, THEREFORE, BE IT RESOLVED by the members of the First Armored Division Association in plenary session assembled, that the United States Armor Association be commended for its exclusive devotion to the concentrated study and refinement of existing theory, doctrine, history, and techniques of armored warfare, and

BE IT FURTHER RESOLVED that the officers and staff of the United States Armor Association be congratulated upon their serious efforts and notable contributions toward preserving and perpetuating the identity and distinction of an armored force as an idea and a concept deserving of specialized and independent treatment within the field of periodical military literature.

BE IT FURTHER RESOLVED that the United States Armor Association and its publication ARMOR should receive the continued support of the Department of Defense and it is directed that the Secretary-Treasurer transmit copies of this resolution to the President of the United States, the Secretary of Defense, the Secretary of the Army, the Chairman of the Combined Chiefs of Staff, the Chief of Staff of the Army, the Chief of the Army Field Forces, the President of the United States Armor Association and the Editor of ARMOR.



# Human Engineering — A Tool for Armor

*While the human body is one of the most versatile of all machines, its relation to the weapons of war requires a high degree of engineering to produce maximum operational effect. The placement of radio, steering, ammunition and gun equipment in the turret of a tank is important—even more so than is the spotting of the stove, refrigerator and garbage unit in a functional kitchen*

by CAPTAIN JOHN T. BURKE

**I**T has been said that the medium tank is the basic ingredient of armored warfare. Be that as it may, the medium tank, of and by itself, is nothing more than one of the most complex and expensive terrain features ever devised. Armored warfare is not the tank, but the tank and its crew, the man-machine team, wedded into a harmonious whole.

Human engineering has a unique contribution to make in the marriage. Before discussing human engineering as such, however, it might be well to analyze a peculiar disease which often afflicts the world of machines and mechanical engineers. For lack of a better name, we will call this affliction "machinitis." Those suffering from this malady hold to several unscientific doctrines (although perhaps unconsciously), and conduct their operations accordingly.

First among these notions is the concept of machines "doing" things, including fighting wars. The logical

correlate of this concept is the belief that the operator will be capable of adjusting to almost any design, and that he can easily be added after the tool is built. This belief results in the mad and merry building of machines, without the slightest concern for the nerves, muscles, and receptors that will later operate them.

The second symptom of "machinitis" is a complete faith in what is termed experience, or "common sense" observation. By virtue of this faith, the design of machines for human use offers no problem to the diseased one. The design of controls, panels, dials, exits, entrances, and other equipment, as well as their location in the apparatus, is simply a question of a little meditation and "trial and error" by the mechanical engineer.

Finally, when after a great deal of time and expense, the equipment is found to be inefficient and difficult to maintain, the "machinitic" jumps to one or all of three conclusions: (1) The machine is structurally weak; (2) Some extreme physical condition, such as heat or cold, has brought about the damage; (3) The operator was improperly or inadequately trained.

It seldom occurs to this individual that the difficulty might be inherent in some characteristic of the machine

to which the average operator cannot adjust. His obsession with machines has blinded him to the possibility of unique human operational characteristics.

It would appear that armor has not completely escaped this machinitis scourge. The malady calls for the services of a specialist, an individual trained to diagnose and treat man-machine illnesses. It is as such a specialist that the human engineer has some valuable services to offer.

## Subject Matter, Method, and Scope

Historically speaking, two trends operated to produce the human engineer. First, there was the constantly increasing complexity of the machine age. It soon became evident, particularly to industry, that the advancement of machines was outstripping the capabilities of the human operator. The result was a loss of efficiency in terms of fatigue, morale, and injury. Secondly, scientific psychology advanced its knowledge of man, and was rapidly taking many aspects of human experiences and behavior from the realm of guesswork.

Originally, the machine designer considered human behavior unpredictable in engineering terms, and the problem envisioned was one of training the operator to an already-

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existent machine. Scientific studies were made of the distribution of effort in time and of particular motion patterns best suited to the performance of a given job. These investigations were titled "time" and "motion" studies. In the early part of the century, Frank ("Cheaper by the Dozen") Gilbreth gave impetus to the time and motion field with some notable achievements in greater industrial efficiency.

It soon became apparent to the machine world, and to the psychological scientist particularly, that the cart had been placed before the horse. Why build a machine and then concern oneself with making the operator fit it? Why not study the operator and build the machine so as to encourage his most efficient operation?

With the latter notion came one of the basic principles of modern machine psychology: The machine and the operator are not two systems, but one. Man is an indispensable element in the total control system. As such, he must be considered at the conception of the machine, not after its birth.

Human engineering is thus experimental psychology as applied to man's work and machine environment. Its method is essentially the controlled experimental technique of the physical sciences. In the operation of natural laws, there are always two or more elements—one or more causes operating so as to produce one or more effects. Unless one is able to "control" these variables, cause and effect become hopelessly confused. By controlling one possible cause, preventing its operation, one is able to observe the specific effect of the other.

Consider, for example, a possible "type" problem for the human engineer. What is the effect of gun blast on the accuracy of ranging with the stereoscopic rangefinder? The answer to this question might well be important in terms of training and equipment design. The problem might appear to be a simple one in "common sense" observation. To the human engineer, it is not so simple. First there are the obvious associated questions: Are we referring to gun blast in general, and its effect on ranging in general? Or is the question one of a specific gun, a specific tank, and a specific rangefinder? Under what environmental conditions, as de-

scribed by speed of the tank, type of ammunition, terrain characteristics, and firing rate? What is meant by "gun blast"? Is it to include the sound, in terms of amplitude and frequency, the vibration of the tank with gun recoil, the fumes following the blast, or some combination of these components?

Then there are the not-so-obvious questions. To what type of gunner does the problem refer? Is he to be the average gunner we would expect under, say, mobilization conditions? What is the state of his mental and physical conditioning? Is he to be given some protection from the blast, such as ear wardens? What are the criteria of accuracy with the rangefinder in terms of speed of operation, distance to the target, and type of target?

These are not impossible questions. They merely indicate the complexity of the experimental task. It is almost impossible to solve a problem such as this in terms of experience, or "common sense" observation. The causes and effects are so involved that only precise experimental methods, usually coupled with complex but sound statistical procedures, can give a reasonable and useful answer.

Human engineering, then, is the science of man-machine relations. Its method is that of modern experimental psychology. Its purpose is a practical one—that of obtaining the greatest

possible efficiency from the man-machine team. Its scope includes: the application of principles of human operation to machine design; the determination of scientific principles for machine operation and operator training; and the study of already-existent machines for improvement, where possible, of human operation.

### Past Contributions

The value of human engineering to Armor can perhaps best be discussed in terms of contributions in other fields that are a matter of record. Rather than labor through specific studies, it might be more profitable to consider some general findings and their applications.

As has been stated, time and motion principles were among the earliest contributions. A man's body is not automatically completely adaptable to a given work situation. It works more efficiently with one pattern of motions, following a certain sequence, than another. It also works more efficiently if work is distributed systematically in terms of time. Assembly line production has been known to more than double as a result of simple alterations in work time and methods, yet with no increase in total time or effort.

Various environmental factors have been found to be closely related to the efficiency of human performance. Sound, for example, often has a sys-



Human engineering in the tank results in maximum crew efficiency in combat.

All Photos U. S. Army



tematic effect on performance, sometimes helpful, sometimes detrimental, depending upon the sound characteristics. The same holds true for variations in the intensity and color of light. At some time in the unrecorded past, the maritime world asked itself, "What color light can best be seen at night?" "Machinitis" was a rather common malady in those days, and the seafaring men leaped to the conclusion: *red*. After some time the psychologists informed them of a very interesting phenomenon: the human eye undergoes changes in the dark. There is a "shift" of perceived brightness, and green, blue, or blue-green can be seen at greater distances than can yellow or red!

Some of the human engineer's most valuable and interesting findings have been in the field of perception. He has shown a doubting machine world that perception is not "seeing," as such, but is rather the more or less simultaneous interpretation of what is received by the eye or other receptor. This interpretation of data by the human is extremely intricate and difficult to predict. Consider, for example, the problem of airplane dials and panels for a pilot. For efficient use, certain principles of dial placing, numeral size, and numeral interval apply; and serious mistakes have been traced to faulty design. The principle of simplicity is important, yet at times an operator has been given a dial which he could not read, when a simple "on-off" flash would have sufficed.

Similarly, the efficiency of machine operation is greatly dependent upon

the design and placing of levers and other controls. Slight differences in the length of a lever, the circumference of a wheel, the position and friction of a knob, and other apparently non-consequential factors have been found to be quite important. In some instances, an operator has been required to differentiate by touch for his operations, in terms of the size of a knob. Yet a simple experiment will show that he can recognize more *shapes* of a given size, and do so more accurately.

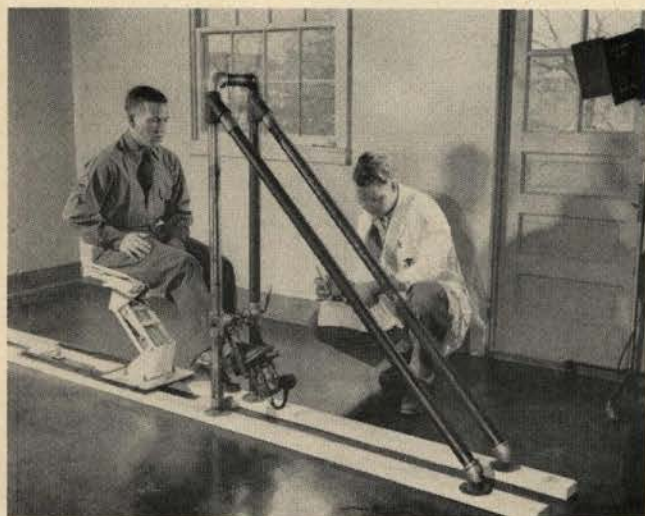
World War II saw a tremendous increase in the complexity of war machines and the forces they exerted. The demands of the Air Force and Navy for data concerning human characteristics became so great that it became necessary to establish high level panels of experts and extensive laboratories. The naval and air men had a lot of questions to ask: How much could the average man stand in the way of heat and cold, pressure, vibration, gross movement, sound, and work in general? What were the best work periods for various jobs? What effect did a multitude of forces have on the operation of various precision devices, such as radar and sonar? Where should controls be placed, and how should they be designed? What effect did submarine duty have on the sleeping cycle, and what should be the color of submarine walls?

The above are only a few of thousands of contributions by the human engineer to the machine world. In the field of audition he contributed to the efficient design and use of

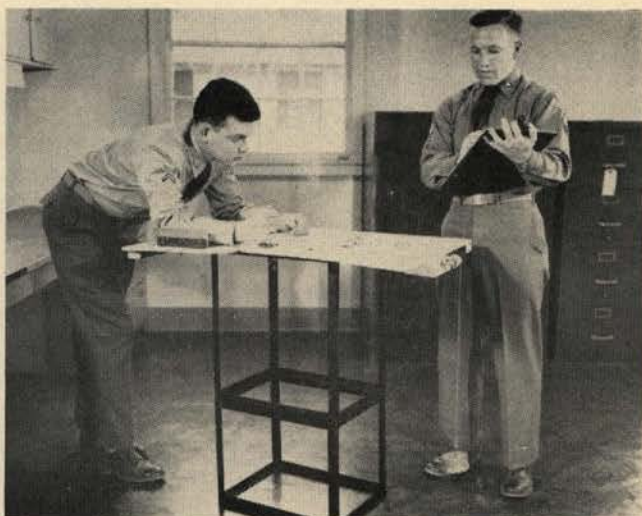
communications equipment. He has had a beneficial effect on the design and use of complex optical devices, ranging from the electronic microscope to the most powerful telescope. Again in the field of visual perception he revealed that the efficiency with which man reads is dependent upon a host of complex factors, including the intensity of light, the contrast of backgrounds, the size and spacing of type, and various visual deficiencies. He has studied the effects of physical forces on man, to include sound, vibration, atmospheric variations, motion, and odors. In brief, he earned the title of "doctor of machines," indispensable in the machine age.

### Human Engineering in Armor

The human engineer is making, and has made in the past, some significant contributions to armor development. For various reasons, however, this activity has been very limited as compared to that in other elements of the Armed Forces. In the past, armor equipment has not posed the problem of human operation in the emphatic terms it does today; while in such agencies as the Navy and Air Force more complex apparatus made scientific research of this nature a necessity rather than a luxury. One indication of the importance of human engineering to the Navy is shown by the increased emphasis on scientific psychology in naval training. In the spring of 1947, a group of distinguished psychologists were invited to give a series of lectures at the Naval Postgraduate School.



Apparently minor points such as application of footpressure to pedals from a tank seat are carefully tested.



In this operation two technicians are testing the degree of motion and wrist strength as applied to tank operation.



Armored warfare is preeminently machine warfare. But no machine drives itself, or arms itself, or maintains itself, or aims itself. The concept of machines taking ground is a snare and a delusion, a sort of military schizophrenia which indicates "machinitis" in an advanced stage of development. It can be avoided by visualizing man and machine as one, never as independent elements.

The definitions and examples cited above no doubt suggest in themselves the application of human engineering to the advancement of Armor. The possibilities for profitable research are numerous, and they logically commence with the machine that is at once Armor's right hand and Achilles heel, the tank. In this respect, the general problem reveals itself in two activities; the more or less original design of a tank, and the redesign of an existing tank or its components.

Consider for a moment a few of the numerous problems in tank design that are logically the domain of the human engineer. There are knobs, levers, buttons, pedals, seats, panels, latches, hatches, grips, triggers, and springs. Within the limits demanded by military characteristics, where will they go? What will be their over-all design in terms of size, shape, weight, color, direction of movement, span of force, and grouping with each other? Then there is the tank's reason for existence, the heavy armament. What forces from the gun can the crew tolerate without too great a loss of efficiency?

An even more basic problem arises in the decision as to whether to use a certain piece of equipment at all; or if it is a necessity, the question often arises as to what fundamental scientific principle it should employ. A possible example is clothing for tankers. Will the gunner operate more efficiently with one type of glove or helmet than another? If he will, and this is shown in an experimental way, then the expense and other difficulties associated with the procurement of special equipment are justified.

The logical implication of all this is the need for coordination between the mechanical engineer, the ordnance expert, and the human engineer. This coordination cannot be accomplished in a hit-and-miss fashion, but only by an intimate exchange



The space limitation in a tank turret is a challenge to the human engineer.

of information throughout the design, redesign, and training process.

As has been stated, the design of equipment from the operator's viewpoint is only one of the skills of the human engineer. The operator can generally operate a given piece of equipment in one way better than another in terms of time and motion. He also learns machine operation more effectively when certain training procedures are employed, and the specific procedures are often variable from one piece of equipment to another. Then there is the problem of selection. Some men are simply not adaptable to the operation of a certain machine, while with another they have little difficulty. These human peculiarities point out the need for scientific job analysis, aptitude test construction, and time and motion study. While the tank has been emphasized throughout this discussion, the principles described apply to any and all of our equipment.

Of course the design of armor machines will inevitably call for compromise. Certain military characteristics are essential to the nature of the equipment, and they more often than not collide directly with characteristics most desirable from the human viewpoint. Here compromise becomes a necessity, and the point of compromise should be partially diagnosed by the human engineer.

In this respect, we encounter in

engineering psychology what to the economist is the "law of diminishing returns." It states, in brief, that there is a point beyond which further investment fails to yield proportionate returns. Likewise, there is a point at which increases in the complexity of the machine and the forces it exerts are so great that theoretical improvements fail to yield a proportionate return on the battlefield. Through scientific research, the human engineer can predict this point with a fairly high level of confidence.

In summary, then, it would appear that increased application of scientific psychology to the machine problems of Armor is economically and militarily desirable. The logical need for an emphasis on this approach is obvious when one considers the tremendous cost in money, time, and material of armor equipment and the training of personnel.

The technical advancement of machines must be accompanied systematically with an increased knowledge of the men who must operate them, and who are an indispensable element in the control system. Otherwise we flirt with "machinitis," a disease which brings us to perceive machines as taking ground and winning battles. Inefficiency, lost lives and battles; these are the fruits of an illusion which can make the "Arm of Decision" a pious hope on the field of battle.



# THE REPLACEMENT SYSTEM

by MAJOR GENERAL CHARLES L. SCOTT

**D**URING World War II, I made numerous efforts to find out what system was being followed in the various theaters for estimating needs and for handling and assigning replacements. It was difficult to get a clear and definite picture of the work.

After several readings of replacement data I came to the conclusion that, rather than a definite over-all system, a hit or miss procedure was followed, tailored to suit the ideas of each theater. I agree with the Patch Board that the replacement system in the war was a failure due to poor estimates, poor handling and misassignment of personnel, not to poor training in the United States. Certainly this was true of Armored Force replacements.

In World War I, I was in the Remount Service of Quartermaster Corps, where I purchased, trained, conditioned and issued horses and mules for the Army. I feel sure that five classes of animals—riding, draft and pack horses, and draft and pack mules—were far more efficiently handled in that war than were human replacements for the arms and services in World War II. The Remount System put horses and mules, by class, where they were needed and when they were needed at the front, and far more effectively than the Replacement System did for personnel in World War II. The remount organizations in the States and overseas were similar in operation. They talked the same language and kept in close contact with each other. The understanding and teamwork in all animal matters such as estimates, organization and operation, did not exist in the personnel replacement system in World War II.

In the late war all of my service

was spent in the Replacement System for the Armored Force. In my commands the training and issue of more than a quarter million men was either conducted or thoroughly inspected. The opinions expressed here are based upon this work and this source of information.

I am convinced that replacements should be trained and handled from the training center to the front line by the arm or service requiring them. The most demoralizing sight I have ever seen occurred early in World War II at Shenango, Pennsylvania, where combat replacements for Infantry, Artillery, Armor, etc., were being handled by the Service Command. Efficiency and morale were restored at once when Army Ground Forces took over this work at Fort Meade, Maryland, and Fort Ord, California.

In stating that the failure of the replacement system of World War II was due to misassignments and poor estimates, and not training in the United States, I am sure this is true of Armored replacements. At no time was there any complaint of lack of training of Armored Force replacements. There are on record numerous commendations, official and personal, from many sources, as to the efficiency of this training. The first one received was from the North African Theater early in 1943 (General Camp's report as observer in this theater). This report stated in effect that "the Armored Force replacements were the only ones sufficiently and properly trained and were not only efficient as armored replacements but also as infantry unit replacements."

This fact is mentioned not because other arms did not later give as good training as Armor but to stress the following important points which I

believe were essential to assure good training. They are not revolutionary, but are just based on common sense.

First: Upon assuming command of ARTC in August of 1942, I got authority from General Devers, then commanding the Armored Force, to hold over training battalions not needed at this time as replacements and to give them two weeks of *field training* not then given to replacements.

Second: Upon initiating this field training, a whole day was spent testing and questioning each trainee on all subjects given in previous training and finally in getting his ideas on training. This test revealed these extremely important matters: That the company clerks were keeping the paper record of a man's training but there were no steps taken to assure that this record conformed with actual training. As a result, some men carried as tank driver had not driven, while others carried as gunner hadn't fired, etc.: That the soldier himself didn't know what subjects should be covered in training, how he had been rated in the ones covered, or what his MOS was: That he had never been asked for any suggestions or any opinion on training: That men absent or sick for a week or more rarely ever made up the training they had missed but were issued at the end of training period just the same.

Third: To correct these conditions I decided to bring the trainee as fully as possible into his training and to give him some check on the main instruction he should receive. Therefore, he was issued a small durable card, similar in size to a driver's license or identification card. This card showed the small arms training, the machine guns to be fired, vehicles to be driven, and tank weapons to be



fired, and opposite each was a space for rating the proficiency attained. The men carried these cards to training in their wallets and the instructors entered their rating thereon after the completion of each subject. Finally, at the end of training the company commander entered the job the man was best qualified for such as "tank driver," "tank gunner," "rifleman," etc., assigned his MOS and signed it. Very few lost these cards and they were easily replaced in training. Men called them "our diplomas" and they *kicked* if any training was omitted. These cards at first got through to Fort Meade, Maryland, where they were reported most useful, and then to units receiving men in the active theaters. Unsolicited reports praised them highly as just what was needed to show training of men and to help in proper assignment. However, after six months they were taken up and destroyed at embarkation points as "violating security measures" and "as unnecessary paper work."

Fourth: Men of each battalion, before being shipped out, were questioned on their training and were asked for suggestions. They contributed many valuable ideas as to where time was too long or too short, where instruction was most effective and where it was poor. A surprisingly large number desired manuals and reading material on tanks, gunnery, etc. As a result, a book store was established where as many as 10,000 training manuals were purchased in a training cycle. Also, the Armored School provided free for this purpose a number of very valuable pamphlets on driving, motor maintenance, gunnery and tactics. They were simple, profusely illustrated, and far more readable and understandable than the dry, finely printed, complicated government-issue literature. Invaluable as training aids, they were issued free. This leads me to state here that sometime I think in our training methods and procedure we forget that we have highly intelligent soldiers the majority of whom know how to read and write and so can instruct themselves for military duties just as they do for school work.

Fifth: Most of the subjects taught at this time (August, 1942) were in the company where an NCO was struggling to put over 26 subjects to 12 men. This can no more be done

in instructing an individual in the Army than it can be done in high school, college or in officer education. So each training regiment was required to conduct training by committees in 5 sections, namely: 1. General subjects; 2. Small arms; 3. Vehicle driving and maintenance; 4. Tank gunnery; 5. Field training. It was the unanimous opinion of everyone, officers and soldiers alike, that instruction under the committee system was far better and more thorough than by company. It also was most economical in equipment. (For example, training by company at one period of the war would have required 1,



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800 tanks in ARTC; by committee only 1,000—savings 800 tanks worth \$80,000,000!)

Sixth: Based on my observation of tank units in battle in the Middle East with the British Eighth Army, the following (not then taught in RTC) were introduced into training: Overhead fire with the machine gun and tank cannon; simple fire problems for tank crews and for tanks within the platoon; booby traps; mine laying and removal. All important subjects previously taught were reviewed and tied in at this training. Men questioned for a year rated this period of field instruction as the best of all instruction given, regardless of the hardships suffered when it was carried out in bad weather, heat or cold, rain or shine.

Seventh: The Armored School

greatly assisted in this work, as officer candidates and specialists such as radio operators, mechanics, etc., were able to participate, thus greatly reducing the overhead in instructors and specialists. It also gave this school personnel practical experience in the field—certainly, too, overseas replacement depots receiving men with this amount and character of training should not require much overhead to carry on effective training.

Eighth: Fortunately the Armored Replacement Training Center was receiving a steady flow of one battalion (1000 trainees) per week. Therefore, I directed that any man missing more than five days of training (which couldn't be made up as a rule) would be transferred to a following battalion. This was a temporary loss of strength to the battalion making the transfer but in the end it was evened out by receipt of men from preceding battalions needing to make up training. This assured *complete training for all men*.

The foregoing eight steps, to my mind, assured turning out a replacement trained in the prescribed subjects and prevented any complaints of lack of training from overseas theaters. It set up a check of his own training by the trainee himself, and he took this seriously, too. Prior to instituting these steps the administrative preparation of records was the all-important work before shipment overseas. These steps made this paper work a *true report of training* and not just good administrative paper work.

In the Armored Replacement Training Center a start was made with competent overhead personnel. As manpower grew short the situation became worse and depots were subjected to numerous changes in policy. "Keep and use over-age men;" . . . "ship over-age men and use 18-year-olds;" . . . "use 4F's, ship 18-year olds;" . . . "ship best of 4F's, keep worst, and use men rotated from active theater." The only trouble then was that all rotated men were being discharged on the point system. I officially recommended the adoption of a new class for overhead "U.U.—utterly useless." Certainly at the start of a major war efforts to conserve personnel serving in U. S. installations and fit for combat duty should begin at once. Retired personnel and over-age and physically defective but mentally ca-



pable individuals should be used first: then wounded and men rotated from active theaters. I found no objection to this work on the part of personnel returned from active theaters except where they, too, were misassigned (for example, an infantryman assigned as an armored instructor).

Early in the war some instructors were obtained from hospitals after being returned from the North African and Italian theaters. Most of them were Regular Army men and were obtained through personal contact (not official action of GI or AGO). They were our top instructors. Some had lost an eye, an arm or a leg. They taught motor maintenance, tactics, and gunnery. Trainees called them "The Purple Heart Club."

The morale factor in training, I found was invariably tied in directly and almost exclusively to instruction. Poor instruction meant poor morale—high class instruction, high morale. American boys drafted in wartime know a poor instructor from a good one at once. Poor instruction is resented as a waste of time and as a failure in providing a fair chance to exist in battle, and these opinions are all too true.

In the Armored Force, up until November, 1943, all specialist training for clerks, radio operators, mechanics, and specialists of this nature was conducted at the Armored School *after the trainee had his full course of instruction as a fighting soldier and tank crewman*. This I think was correct procedure. Eight weeks of basic training and a nine-week specialist

course at Replacement Training Centers to my mind did not produce a good soldier and provided only a "ham" mechanic and half-way specialist. At one time the ARTC conducted a six-week course for NCO's. The product was highly complimented in the United States and overseas in combat units. "These men are just what we need . . . Up to date in all new equipment and technique, especially good in instructional methods" were the comments received. This instruction was discontinued just before the invasion of Europe when these men were most needed. I believe AFF schools should train all specialists and also some NCO replacements and that replacement centers should have 17 weeks of training for the individual, to include his work within the platoon.

Officer candidates, as a whole were, I believe, quite satisfactory. They furnished a large part of the leaders for the company in combat. They defeated the two enemies—Japan and Germany—who were supposed to be exceptionally well led in battle. Of course, this type of officer lacked instruction in mess management, court martial procedure and other administrative duties because the seventeen short weeks allowed to make them into officers was primarily and properly spent on combat duties and leadership in battle. Therefore, if our nation wants better officers in wartime it should provide more time (and money) to select and instruct reserves in peacetime and for OCS in wartime. I have no patience with the

postwar criticisms of our officer personnel (and "brass hat") so popular in the press, in Congress, among ex-GI's, and elsewhere. It is neither fair nor justified. I think, too, that this is the time to point out the loyalty of the commissioned personnel towards constituted authority and to the *men under them*. This loyalty comes at a time, too, when loyalty is at a low ebb in business, in labor and in politics. Officers might have come back at enlisted men, too, and pointed out that there were some bad and worthless "GI's." However, it is to their everlasting credit that they did overlook this failure of a few men under them and did remain loyal to the vast majority who were exceptionally fine soldiers.

Until all of the complete data of our World War II replacement system is thoroughly studied and digested, I doubt that all of our military agencies will fully appreciate the terrific waste and the other terrible effects occurring from inaccurate and uneconomical estimates for personnel for active theaters and from careless misassignment to arms and services. I point out below some ill effects which I believe occurred for armored personnel.

a. According to my best information from many, many sources, scarcely 50 per cent of the tank replacements of World War II were ever assigned to a tank company. At Fort Knox, 1,000 medium tanks, worth one hundred million dollars, were provided to train them; millions and millions of rounds of 75mm, 90mm, and 105mm and other ammunition—needed, too, in combat—were fired in training them. Millions of gallons of gasoline—needed everywhere else—were also used. And so go the other costs involved in this training. Much of it was wasted by misassignment!

b. Reports from hundreds of sources show that tank replacements issued to other arms were actually needed in armored units; maybe not on the day or in the week when they were misassigned, but within a relatively short period. Having misassigned the armored replacements this error was compounded by sending, to fill armored needs, infantry and other replacements. These men had to be



Infantry replacements on the way to 45th Division at Nettuno, Italy in WWII.



trained, frequently in combat, adding more to the cost and providing, at best, only a makeshift replacement. Thus the fighting efficiency of combat units was invariably lowered by misassignment.

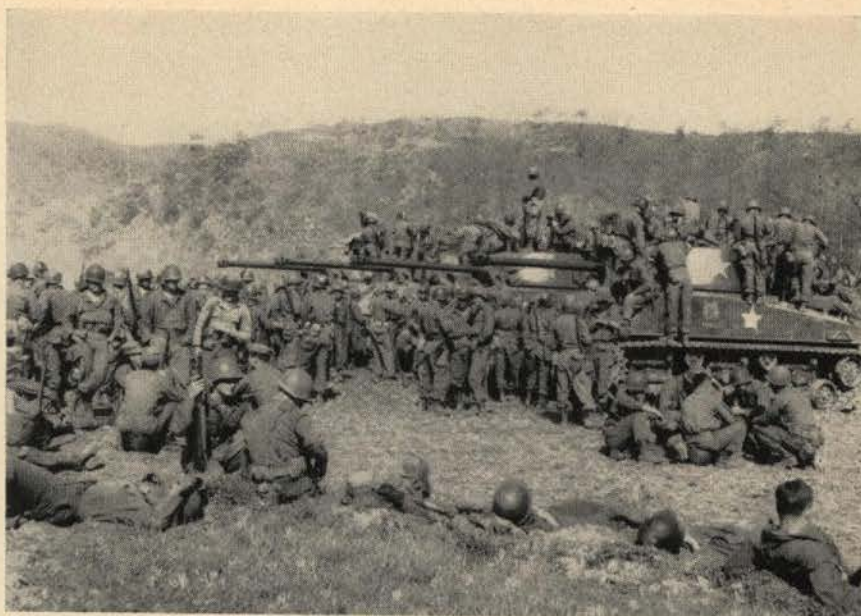
c. I've never seen a soldier thoroughly and properly trained for one arm who didn't prefer service in that arm. Misassignment, therefore, does more than any other act can do to lower morale. The soldier looks upon his basic arm training and his time as being wasted and, furthermore, believes his chances to survive in combat are lessened by his misassignment. I believe the widespread misassignment of personnel is responsible to a large degree for the resentment and criticism which has been evinced by former World War II soldiers toward the Army and their officers.

d. Finally, we do not know how many, but certainly some men were killed for lack of training in one arm when they would have survived if properly assigned.

To me it is most surprising to see that the War Department abdicated in matters pertaining to estimates, organization and operations of a replacement system in a war where replacements, instead of divisions in reserve, were depended upon for continuity of action. As a result, we see that the Army Ground Forces, the Service Command, the Air Force and each theater operated in no coordinated manner, but under different systems and, in many cases, in my opinion, not on any careful estimates, but on *over-estimates* and poor guesses. Of all the high commands, it is also my opinion, that only AGF gave the replacement system a place in its plans and operations worthy of its importance and at the same time made conscientious efforts to keep overhead down and to get proper estimates. Any of its suggestions or recommendations for active theaters received scant if any consideration; thus teamwork was completely lacking, in my opinion.

I believe the following things essential to an effective replacement system for the Army in a major war:

First: A definite, prescribed system and organization for all arms and services are required in order to secure accurate estimates and uniformly



Replacement tankers undergoing instruction near the front lines in Korea.

efficient methods for handling and issuing replacements. The system and organization in the United States and in each theater must be similar in principle.

Second: Arms and services should handle the training and issue of their own replacements in depots in the United States and in each theater. To train by arm and service in the United States and then to have men mixed up overseas and finally issued like sheep out of a chute is a complete and inexcusable waste of everything essential to winning a war.

Third: Where replacements become the main reliance of a theater commander for keeping his armies in continuous operation they assume an importance equal to that of the armies. Therefore, correct estimates, by arm and service, organization of replacement depots, correct issues, etc., become a *major command responsibility* which cannot be delegated to an AGO, to a GI, or to a Service Command.

Fourth: Everyone in the chain of command, everywhere, in peace and in war should be required to study the past inefficient handling of replacements and to understand thoroughly the inexcusable waste of manpower, training efforts and national resources and other ill effects that occur through misassignment and poor estimates.

Fifth: Greater care needs to be exercised in starting replacement depots in the United States so that they have

competent personnel not required in combat and are not continuously disrupted by changes in personnel policies. At the start, therefore, use should be made of retired personnel, over-age for combat personnel, and men with physical defects. Officers and men wounded and rotated home from combat should be utilized as rapidly as possible.

Sixth: We have a highly intelligent class of soldier. Our equipment is becoming more complicated in each war. The vast majority of our men can read and write and, thank God, do some thinking for themselves. If furnished proper reading material and manuals they can instruct themselves in study periods in many ways, thus saving time and overhead, and probably getting better instruction, too.

Seventh: In line with the sixth paragraph, above, I believe we need to radically revise our individual instructional methods for the trainee as pursued by most training depots in World War II. His training as an individual by a corporal in a company is no longer possible. His teamwork in the company will come after the individual training and this individual training, in the future, should follow more closely the individual instructional procedure pursued in our civilian school system and in our officer schools. This means the committee system of instruction by subject, and with personnel expert in the subject taught and in the best instructional methods.



# Some Early Thoughts on Armor\*

## Germany's Minority Spoke Out Against Opposition in 1937

### Tank Attack by Fire and Movement

**T**HE layman, when thinking of a tank attack, tends to envisage the metal monsters of Cambrai and Amiens as pictured in the war reports of that period. He thinks of vast wire entanglements being crushed like so much straw; he remembers how the tanks crashed through obstacles, smashing machine guns to splinters beneath their weight; he recalls the terror that they inspired as they ploughed through the battlefield, flames darting from their exhaust pipes, and how this "tank terror" was described as the cause of our collapse on the 8th of August, 1918. Such steam-roller tactics are one—though not the most important—of the things tanks can do; but the events of the last war have so impressed themselves on the minds of many critics, that they have built up an entirely fanciful idea of a tank attack in which vast numbers of tanks massed together roll steadily forward to crush the enemy beneath their tracks (thus providing a magnificent target for artillery and anti-tank fire) whenever and wherever ordered by the high command, regardless of the condition of the ground. The fire power of the tanks is underestimated: the tank is thought to be both blind and deaf: it is denied the ability to hold ground that it has captured. On the other hand every advantage is ascribed to antitank defense: it is alleged that the defense will no longer be susceptible to surprise by tanks; antitank guns and artillery always find their mark regardless of their own casualties, of smoke, fog, trees or other obstacles and ground contours; the defense, too, is always located exactly where the tanks are going to attack; with their powerful binoculars they can easily see through smoke screens and darkness, and despite their steel helmets they can hear every word that is said.

As a result of this picture it follows that tank attacks have no future. Should tanks therefore be scrapped and—as one critic has suggested—the tank period be simply by-passed? If this were done all our worries about new tactics for old arms of the service could be scrapped at the same time and we could settle down comfortably once again to positional warfare as practiced in 1914-15.

Only it is not very sensible to leap into the dark if you have no idea where you are going to land. *It follows that until our critics can produce some new and better method of making a successful land attack other than self-massacre, we shall continue to maintain our belief that tanks—properly employed, needless to say—are today the best means available for a land attack.* But in order to make it easier to judge the prospects of tank attacks, here are some of the significant characteristics of tanks today.

All tanks intended for serious action are at least sufficiently armored to be impervious to the fire of antitank guns. For fighting against antitank weapons and enemy tanks, such protection is insufficient; therefore the tanks so far ordered by the so-called victorious nations of the World War are considerably more strongly armored. For example, to penetrate the shell of the French Char 2C a gun of at least 75mm caliber is required. If an army can at the first blow commit to the attack tanks which are invulnerable to the mass of the enemy's defensive weapons, then those tanks will inevitably overcome this their most dangerous adversary: and this must lead to the destruction of the enemy's infantry and engineers, since the latter, being shot at by tanks and with their defensive weapons eliminated, can easily be mopped up even by light tanks. However, should the defense succeed in producing a defensive weapon which can penetrate the armor of all the attacker's available tanks, and should he manage to deploy such weapons at the right time and in the decisive place, then the tanks will have to pay heavily for their successes or may even fail altogether if the defense is sufficiently concentrated and sufficiently deep. The struggle for mastery between missile and armor has been going on for thousands of years, and panzer troops have to reckon with it even as do fortress troops, sailors and, recently, airmen. The fact that such a struggle exists, with results that continually vary, is no reason for denigrating tanks as a land weapon: for if we do, we shall be reduced to sending men into the attack with no more protection than the woollen uniforms of the World War which, even then, were regarded as insufficient.

### Movement

It has been said, "only movement brings victory." We

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Fifteen years ago the theory of the use of mobile armor in ground combat was a difficult one to get across. The concept was appreciated by only a small group of visionary soldiers in several countries. In Germany, Heinz Guderian and a few others, in order to offset the vocal opposition to armor, prepared an article expressing the views of the exponents. It appeared in the journal of the National Union of German Officers in the Fall of 1937. Guderian has included it in his memoirs as a part of the chapter on the creation of Germany's armored forces. In view of the singularly interesting parallel with some of today's thinking, ARMOR reprints it with kind permission of E. P. Dutton & Company, Inc., publishers of PANZER LEADER.—Ed.

agree with this proposition and wish to employ the technical means of our time to prove its truth. Movement serves to bring the troops in contact with the enemy: for this purpose one can use the legs of men or of horses, the railways or—recently—the automobile and the aeroplane engine. Once contact with the enemy has been made, movement is generally paralyzed by hostile fire. In order to permit the relaxation of this paralysis, the enemy must either be destroyed or made inoperative or driven from his positions. This can be done by employing fire power so superior that his powers of resistance collapse. Fire power from fixed positions has an effective range corresponding exactly to the observed range of the mass of the weapons employed. That is as far as the infantry can make use of its covering fire; when that point is reached the heavy weapons and the artillery must change their position in order to permit a further advance under cover of their fire power. Vast numbers of weapons and an even vaster quantity of ammunition are needed to fight this sort of battle. The preparations for an attack of this sort require considerable time and are difficult to conceal. Surprise, that important element of success, is very hard to achieve. And even if the original attack does catch the enemy unawares, the moment it is launched the attacking force will have shown its hand, and the reserves of the defense will converge on the point of attack and block it; since reserve forces will now be motorized, the building up of new defensive fronts is easier than it used to be; *the chances of an offensive based on the timetable of artillery and infantry cooperation are, as a result, even slimmer today than they were in the last war.*

*Everything is therefore dependent on this: to be able to move faster than has hitherto been done: to keep moving despite the enemy's defensive fire and thus to make it harder for him to build up fresh defensive positions: and finally to carry the attack deep into the enemy's defenses.* The proponents of tank warfare believe that, in favorable circumstances, they possess the means for achieving this; the skeptics, on the other hand, say that since the element of surprise can no longer be produced as in 1918 "conditions for a successful tank attack can no longer be anticipated." But is it true that a tank attack can no longer take the enemy by surprise? How then does it happen that surprises have been achieved in warfare regardless

of whether new or old methods were employed to bring them about? In 1916 General von Kuhl proposed to the High Command that in order to make a breakthrough primary importance must be attached to the element of surprise in launching the attack, and yet at that time he had no new methods or weapons at his disposal. As a result of surprise achieved, the March offensive of 1918 was outstandingly successful, despite the fact that no new types of weapons were employed. If, in addition to the normal methods of achieving surprise, new weapons are also employed, then the effects of the surprise will be greatly increased; but the new weapons are not a prerequisite to those effects. *We believe that by attacking with tanks we can achieve a higher rate of movement than has been hitherto obtainable, and—what is perhaps even more important—that we can keep moving once a breakthrough has been made.* We believe that movement can be kept up if certain conditions, on which the success of a tank attack today depend, exist: these include among others, concentration of force in suitable terrain, gaps in the enemy's defense, and an inferior enemy tank force. When we are blamed because we cannot successfully attack in all and any conditions, because we cannot storm fortifications with tanks armed only with machine guns, then we can only say that we are sorry and point out that other arms of the service possess in many respects even less attacking power than we do. We do not claim to be omnipotent.

It has been maintained that a weapon only achieves its maximum effectiveness while it is new and before it need fear defensive countermeasures. Pity the artillery! It is already hundreds of years old. Pity the air force! Age is creeping up on it in the form of antiaircraft. We believe that the effectiveness of any weapon is a relative quality, depending on the effectiveness of the counter weapons employed against it. If tanks run into a superior enemy—whether in the form of hostile tanks or of anti-tank weapons—they will be beaten; their effectiveness will be reduced; if conditions are reversed, then they will achieve startling success. Every weapon is dependent not only on the strength of the opposition but also on its own willingness to make immediate, maximum use of the latest technical developments and thus to remain at the summit of its period. From this point of view



the tank will not admit that it has been surpassed by any other weapon. It has been said: "The shells of the defensive artillery travel faster than the tanks that are attacking that artillery." Nobody, up to now, has questioned this fact. Yet as long ago as 1917 and 1918 hundreds of tanks could be moved up to a concentration area immediately behind the front lines of the infantry: could penetrate in their swarms the enemy's line of defensive fire: could clear a way for dozens of infantry and even of cavalry divisions: and what is more could do all this without any preliminary artillery bombardment, that is to say in the teeth of an intact enemy artillery. It is only in unusually unfavorable conditions that the hostile artillery can have any serious effect on the movement of tanks: and once the tanks have succeeded in breaking through to the gun lines, the batteries will soon fall silent and will thus be no longer capable even of hurting the following infantry. Even the immutable artillery tactics of having guns registered on all localities of possible danger proved a failure in the last war. The defensive fire will throw up columns of earth, dust, smoke and so on and this will limit the vision of the tank crews; but such limitation is not intolerable; even in peacetime we have learned how to overcome that. In fact tanks can now advance through night and fog on compass bearings.

*In an attack that is based on a successful tank action the "architect of victory" is not the infantry but the tanks themselves, for if the tank attack fails then the whole operation is a failure, whereas if the tanks succeed, then victory follows.*

### Fire

Armor and movement are only two of the combat characteristics of the tank weapon; the third and the most important is fire power.

Tank guns can be fired whether the tank is stationary or on the move. In both cases the gun is laid by direct observation. If the tank is stationary range can be quickly adjusted and the target destroyed with a minimum expenditure of ammunition. When the tank is in motion the recognition of targets becomes harder owing to difficulties in observation, but this is compensated for to a certain extent by the fact that the gun is situated comparatively high above ground, which is particularly useful if the terrain is overgrown; thus the high silhouette, which has been so frequently the cause of adverse comment as presenting the enemy with an easy target, is not without a certain advantage for the tank gunner. If it is necessary to shoot while in movement the chances of short-range accuracy are good; they decrease with longer range, higher speed and when travelling over uneven ground.

In any event, in land battles the tank possesses the unique quality of being able to bring its fire power to bear while actually advancing against the enemy, and it can do this even though all the defense's guns and machine guns have not been silenced. We do not doubt that guns fired from stationary positions are more accurate than guns fired in motion; we are well able to judge this, since we are capable of both types of engagement. However: "Only movement brings victory." Now should a tank attack be envisaged simply as a means of steamroll-

ing a path through thick and deep defensive positions held by infantry and artillery fully equipped with anti-tank weapons, as was done during the battles of *matériel* of the last war? Certainly not. A man who would attempt this would be thinking purely in terms of the infantry tank, a weapon whose sole function was the closest cooperation with the infantry, a weapon adjusted to the foot-soldier's scale of time and space values. This was a concept which we hung on to for far too long. We neither can nor wish to devote weeks or even months to reconnaissance; we have no desire to rely on an enormous expenditure of ammunition; *what we do want to do is, for a short length of time, to dominate the enemy's defense in all its depth.* We are well aware that with the limited fire power of our tanks we cannot mount a "planned artillery preparation" or achieve a "concentrated artillery bombardment"; our intention is exactly the contrary, it is to knock out our targets with single, surely aimed shells. For we have not forgotten how during the war week-long barrages by the most powerful artillery on earth failed to enable the infantry to achieve victory. *We have been taught by our enemies to believe that a successful, rapid tank attack, in sufficient width and depth to penetrate all the way through the opposing defense system, can achieve more towards ensuring victory than the system of limited advances as practiced in the World War.* Our shells, being aimed at specific targets, will not whistle over the enemy's heads as they did during those costly though pointless creeping barrages: rather if the attack is carried out with sufficient concentration, width and depth we shall destroy recognizable targets as they present themselves and thus drive a hole in the enemy's defenses through which our reserves can follow more speedily than was possible in 1918. *We want these reserves to be available in the form of Panzer Divisions, since we no longer believe that other formations have the fighting ability, the speed and the maneuverability necessary for full exploitation of the attack and breakthrough.* Therefore we do not regard the tank force as an additional means for winning battles, which on many foreseeable occasions could, in cooperation with other weapons, help the infantry to advance. If that were all that tanks were for, the situation would be the same now as in 1916; and if that were true then one might as well be resigned to positional warfare from the very beginning and give up all hope of quick decisions in the future.

But neither the alleged superiority in armaments of our enemy in any future war, nor the increased accuracy and range of guns of all calibers, nor the technical advances made in the employment of artillery suffice to shake our beliefs. On the contrary! In the tank we see the finest weapon for the attack now available: we will not change our minds until such time as the technicians can show us something better. We will in no circumstances agree to time-wasting artillery preparation and the consequent danger of losing the element of surprise, simply because the old maxim says that "only fire can open the way to movement." We believe, on the contrary, that the combination of the internal combustion engine and armor plate enable us to take our fire to the enemy without any artillery preparation, provided always that the important conditions for such an operation are fulfilled: suitable terrain, surprise and mass commitment.



The idea of mass commitment gives our critics cold feet. They write: "There is also the question of organization: of whether the massing of all tank strength in one striking force is a sound basic idea, or whether the alternative theory of allotting tanks organically to the infantry, in order to enable it to attack, is not worthy of equally serious consideration." We assume from this remark that the infantry without tanks is at present incapable of attacking; it follows that the weapon which can attack and which can enable other arms of the Service to advance must indubitably be the principal weapon. The question of whether or not tanks should be allotted to infantry can be clarified by the following imaginary story:

Red and Blue are at war. Each side has 100 Infantry Divisions and 100 Tank Battalions. Red has split up its tanks among its Infantry Divisions. Blue has massed them in Panzer Divisions under direct control of supreme headquarters. On a front of, shall we say, 300 kilometers, 100 kms. are tank-proof, 100 kms. are difficult for tanks and 100 kms. are good tank country. So in battle the following picture emerges: Red has deployed a sizable proportion of its divisions, along with their tank components, opposite the Blue positions in country where tanks cannot operate and are therefore useless, while a further portion are in difficult tank country where, though not entirely wasted, their chances of successful action are small. Whatever happens, only a fraction of Red's tank forces can be employed in the country for which they are suited. Blue, on the other hand, has collected all its armor in the one place where a decision can be reached and where the ground can be made use of; he therefore has the opportunity of going into battle with at least double his adversary's tank strength while assuming the defensive along the rest of the front against Red's very small scale tank attacks. An Infantry Division with, say, 50 antitank weapons can stand up far more easily to an attack by 50 tanks than to an attack by 200. We conclude that the suggestion that our tanks be divided among Infantry Divisions is nothing but a return to the original English tactics of 1916-17, which were even then a failure, for the English tanks were not successful until they were used in mass at Cambrai.

By carrying the attack quickly into the enemy's midst, by firing our motorized guns with their protective armor direct into the target, we intend to achieve victory. It is said: "The motor is not a new weapon: it is simply a new method of carrying old weapons forward." It is fairly well known that combustion engines do not fire bullets; if we speak of the tank as a new weapon, we mean thereby that it necessitates a new arm of the service, as happened for example in the navy in the case of the U-boat; that too is called a weapon. *We are convinced that we are a weapon and one whose successes in the future will leave an indelible mark on battles yet to be fought.* If our attacks are to succeed then the other weapons must be adjusted to fit in with our scale of time and space in those attacks. We therefore demand that in order to exploit our successes the necessary supporting arms be made as mobile as we are, and that even in peacetime those arms be placed under our command. *For to carry out great decisive operations it is not the mass of the infantry but the mass of the tanks that must be on the spot.*

## ARE YOU WELL INFORMED?

**Many service personnel, by virtue of their occupation, fail to carry out their coincident responsibility—that of citizenship—when it comes to voting. A national election has just taken place, with a military man elected to the presidency. Indications are that servicemen voted in greater numbers than in any previous election. How is your store of knowledge in this phase of democracy?**

1. Prior to the election of General Eisenhower, how many U. S. Presidents graduated from West Point?
2. What is the date of Eisenhower's inauguration? 4 January 1953, 20 January 1953, 4 March 1953, 20 March 1953.
3. Which one of these Presidents was not a general? William H. Harrison, Franklin Pierce, Rutherford B. Hayes, James Buchanan.
4. Which one of these Generals was not President of the United States? Chester A. Arthur, Winfield Scott, Andrew Jackson, Benjamin Harrison.
5. How many Admirals have been President?
6. How are the electoral votes determined in each State?
7. What instrument governs the electoral college?
8. Who was the first President to be inaugurated in Washington? What year?
9. Who was the first President to have his inaugural address broadcast?
10. Who was the youngest President? What was his age at the time of his inaugural?
11. Who were the four candidates Franklin Delano Roosevelt defeated for the Presidency?
12. In case of the death of the President and Vice President who would succeed them?

1. One—U. S. Grant.
2. 20 January 1953.
3. James Buchanan.
4. Winfield Scott.
5. None.
6. By the total number of members in Congress from each State.
7. The Constitution.
8. Jefferson, 1801.
9. Calvin Coolidge.
10. Theodore Roosevelt, 42.
11. Hoover, Landon, Wilkie, and Dewey.
12. Speaker of the House.



*Real discipline has its roots at the noncommissioned and junior officer levels*

## *Some Thoughts on DISCIPLINE*

by MAJOR JAMES J. MULLEN

**S**O you want good discipline, do you? For years now, commanders have been talking about the need for improved discipline in our Army. I have yet to hear anyone say that discipline as it exists today is all right and meets proper standards. Therefore, we can assume that there is something wrong with our discipline. Let us look at some of the underlying causes of poor discipline.

I will start with our organization and command structure and point out some failings there. We have always placed the highest premium on leadership. We preach and teach leadership. We have heard about it so much that we take it for granted. But what have we actually done to our leaders? We have a fine chain of command, starting with squad leaders and moving on up the ladder to five star generals; but—we have denied the noncommissioned officer his prestige, his pride and his authority.

We have done that by making too many of them. Look at any army post, any combat or administrative unit, and you will see dozens of noncommissioned officers—who are not leaders. They are not now and never will be leaders because they do not have what it takes to be leaders. They are technicians and specialists, and good ones too; but they cannot lead men. How then did they get their stripes if a noncommissioned officer

is supposed to be a leader? Here is how it happened!

A unit commander had a well-trained, skillful technician in his outfit. Let's say he was a cook. The man was a Private First Class, interested in his job, and was giving full satisfaction. He deserved a reward for his services as an excellent cook. However, he was timid in dealing with others; he followed directions willingly, but did not have the capacity to direct other men. The unit commander had two courses of action open to him. He could promote the man to Corporal, knowing full well that he would never be, in fact, a Corporal, or he could let him go on as a Pfc, unrewarded. Captain Doakes saw in his own and many other units many men wearing the stripes of a Corporal who weren't Corporals either. So he promoted a good cook to a rank he did not deserve. He did it because he could reward him in no other way. Several thousand incidents similar to this occurred, with the result that the morning reports are overloaded and the NCO Clubs overrun with men wearing chevrons, and that's all they do with the chevrons—wear them.

I do not imply that all of our NCO's are unfit. I do say that we have *more* who are not leaders than we have of the genuine article. The good NCO's recognize the poor ones and resent them; and rightly so. A good Corporal gets sore when he sees a Master Sergeant who messes up the detail at Guard Mount, or some other formation.

What solution is there? How can we make the man wearing stripes re-

spected? How can we give the good technician who is *not* a leader the recognition he deserves, while saving the leader's insignia for the man who leads?

Once, not too long ago, we had a system which separated our leaders from the technicians and gave recognition to both. I refer to the old Private First Class with a specialist rating.

In those days, the specialist or technician was recognized by the insignia he wore and the pay he received. Yet he was subordinate to any Corporal and the Corporal was a noncommissioned officer by virtue of his ability to handle men. The present condition of too many Chiefs and not enough Indians did not exist.

A system based on the old specialist rating can be worked out and will give to the man who commands the honors that are rightfully his. Parallel pay scales can be designed so that a top technician would be given the rank of a Pfc and the pay of a Master Sergeant. Men who aspire to command gravitate naturally to positions of command and the specialists would be content in their fields; without the responsibility of leadership for which they are not suited.

A technician need not always remain such. If he wants to, and shows that he can do the job, he could join the ranks of noncommissioned officers and enjoy the privileges of command (along with the headaches).

To place such a plan in effect would require that all positions occupied now by noncommissioned officers be examined, and that those positions which do not include a

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command function be changed to specialist ratings.

The same pay scale would continue but the privileges extended to noncommissioned officers should be modified.

It's hard to tell exactly how many noncommissioned officers would be eliminated, but there would be no more Corporals serving as company clerks, no Sergeants First Class as supply clerks or Master Sergeants as draftsmen. The people wearing chevrons would be those charged specifically with the responsibility of controlling and directing other men. So much for a start. But there are more evils to consider.

The next cause of poor discipline has been the usurpation of the position and authority of the noncommissioned officer by the junior officer. I first saw this begin to happen in 1942 in my unit when orders were issued that all instruction would be carried on by officers only. I have since learned that many other outfits put out the same kind of orders while a lot of capable NCO's stood by gritting their teeth as a green, young lieutenant, who was not yet sure of himself, stumbled through a period of instruction. That trend has persisted. Who supervises the loading of the kitchen truck? A lieutenant. Who checks on a man undergoing company punishment? That's right, a lieutenant!

The odd part of it all is that the good NCO *wants* to work. He *wants* to be given responsibility and a hand in building his unit. He has his pride and he is able. Let's let him do it. All he wants is to be given a job to do and the necessary backing and authority to get it done. Then you might not hear recruits calling a Sergeant "Joe." The NCO must be given back his proper place in the chain of command. The private in his squad should get promoted, reduced, punished, rewarded, given passes, etc., on *his* say-so. The lieutenant and the captain should respect his opinion and give him full control of his men. When this has been accomplished, one of the most vital links in the chain of command will be strong again.

The last fault I find is in our promotion and reduction system. The company commander, the man responsible for the function of his com-

## Army To Test New Heavy Tank

The Army, now building heavy tanks, may have enough ready for field tests by next spring.

The Army now has on hand about a half dozen of the tanks, each mounting a 120mm gun. They will be ready for firing and other range tests within a month or two and then will be sent into the field with troops for the "big tests."

At present the Army has only eighty-five on order, but a limited production program is scheduled to be continued after officials are certain that all "bugs" have been eliminated. The Marine Corps also is interested in the new tank.

Thus far the Army has not found any major faults in the tank, but it has not yet undergone the punishment it must take under field conditions.

The heavy tank, like the new mediums and lights, has a special turret enabling the gunner to keep his fire trained on a target, regardless of the tank's angle of incline.

The new heavy, built by Chrysler, is the Army's counterpart of Russia's Joseph Stalin III, a fifty-seven-ton behemoth mounting a 122mm gun. It will complete the "family of tanks" recommended by Gen. J. Lawton Collins, Army Chief of Staff, but the Army will still rely primarily on the new medium M48 "Patton."

Army experts have claimed repeatedly that the medium's 90mm gun, with the ammunition now available, could knock out any known tank, including the JS-III.

The Patton carries a crew of four, weighs in the forty-five-ton bracket and is believed to have a speed of about thirty-five miles an hour.

The new T-41 "Walker Bulldog" light tank is listed as having a speed of forty miles. It mounts what the Army calls an "improved type" 76mm gun and weighs about twenty-five tons. The size of its crew was not given, but presumably was four.

The new light tank will be issued to troops in the near future. The next of the tank family to go to troops will be the Patton and, finally, the heavy.—From a News Dispatch.

pany in everything it does or fails to do, has a hard road when it comes to selecting and reducing his NCO's. Career management has snatched away his authority to exercise enough control over his unit. Although he can write an efficiency report to accompany an application for advance he is utterly dependent on someone far, far away to either approve or disapprove his recommendation. He may have a good man who deserves promotion but has not the formal education to put what he knows on paper. How then can the bird so far away with the slide rule and the answer sheet evaluate the man recommended? I know that the career plan is suspended, but is it dead? Personally, I hope so.

Perhaps even worse than the promotion system is the procedure the company commander must follow in reducing an NCO he considers unfit. It takes a long time to gather sufficient evidence; it involves a great deal of meticulous paperwork and a very persevering Captain to see it through. Then he must convince a board of three officers that he is right that the man should be reduced.

Apparently the Reduction Board was instituted to protect the NCO from a vicious and no-good S. O. B. I don't think that there are a lot of rough, arbitrary men commanding units. Even if we do have some, why can't our chain of command handle the situation? I believe that the simplest, most effective system would work something like this: A company commander writes a letter to his battalion commander recommending reduction of an NCO and giving his reasons; the battalion commander indorses to regiment indicating his approval or disapproval. The regimental commander is the final authority. If he does not see fit to reduce the NCO he issues orders transferring him to another unit in the regiment. In this manner, those officers responsible for the quality of their units are given direct control.

We *can* have better discipline by restoring our NCO's to positions of leadership in every unit of the Army; by putting the junior officer to work on the kind of jobs for which he was trained; and by giving the unit commander the power he needs in selecting leaders to help him do the job for which he is held responsible.



## NEWS NOTES

### Tanks, Antitank Weapons and Mobility

The following is extracted from a recent address by Army Chief of Staff Gen. J. Lawton Collins before the Carnegie Institute Society of Pittsburgh:

Let me illustrate for you how we have approached the problem of defeating communist armor, in case war should be thrust upon us.

We believe that the communists have more than 40,000 tanks. The free world has many less. An obvious solution would have been to attempt to match their armor—tank for tank—for of course the tank is a splendid antitank weapon. But it is not the *only* antitank weapon. The facts are that we will not need 40,000 of our tanks to defeat 40,000 enemy tanks if a showdown ever comes; and in the second place, tanks are terribly costly vehicles which take a long time to develop and produce—so, we have no intention of trying to match them tank for tank.

For these reasons, we have laid great

stress on the development of a family of antitank weapons. For defense against tanks at short ranges, we have our rifle grenades which are effective against practically any tank. Then we have our 2.36" and 3.5" bazookas which will knock out enemy armor at slightly greater distances. Of course, using a rifle grenade or a bazooka against an enemy tank takes a lot of courage on the part of the soldier who is waiting for the tank to come into range; but in Korea the American soldier has shown that he has what it takes. The first seven shots from our 3.5" bazookas, during the early fighting in Korea, knocked out seven Russian-built T-34 tanks.

Next in the family are the recoilless rifles—the 57's, the 75's and the new 105's. They fire the same type of shaped charge ammunition that the bazooka fires, but to greater ranges. And to reach out still further, we have developed another type of ammunition for use with our standard artillery guns, and this ammunition will also knock out any known tank.

At the same time, while developing

our family of new antitank weapons, we have not neglected our own tank development. For the tank itself, . . . is a splendid antitank weapon; and of course, its offensive capabilities remain as important as ever. . . . No war was ever won by remaining on the defensive and so we have emphasized the Army's need to move swiftly and devastatingly against an enemy.

It is my strong conviction that in any future war air mobility will play a major role. We in the Army are proud to report to you that because of advances in air movement we have the potential of moving faster and farther and can hit an enemy with greater surprise than ever before. This increased mobility is multiplying our potential effectiveness both in airborne assault operations and in the strategic movement of troops over great distances.

We are making our standard infantry division air-transportable, insofar as it is practicable. Within recent months we have flown our new light-gun tank, the T41 Walker Bulldog, combat loaded with gasoline, crew, and ammunition. This gives us the potential, in



Brig. Gen. William J. Bradley  
1st Cavalry Division



Brig. Gen. L. L. Doan  
1st Armored Division



Brig. Gen. Hamilton H. Howze  
2d Armored Division



the early phases of an airborne operation, to supply our paratroopers with the armor punch they need.

### M48 vs T-34

In a recent editorial column in the *New York Herald Tribune*, Walter Millis drew the following comparisons between the M48 and the T-34 tanks in exploring the subject of cost versus life:

"The M-48 Patton tank is probably the best in the world. In caliber of its gun and thickness of its armor it is the approximate equivalent of its nearest Soviet counterpart. Basically, it is the same kind of fighting machine, and in large-scale battle the Patton 48s would be destroyed by Soviet action just as the Soviet tanks would be destroyed by the Pattons. What then, makes it 'better'? A lot of things. It has sloped armor that gives it a little better chance against hits; it has an easily operated drive and transmission that enables its driver to go farther without fatigue; it has foam rubber cushions that add to the comfort and therefore the endurance of the crew; it has a very expensive sighting apparatus that increases the chance of a first-round hit. All these, and other, features cost a great deal of money. In sum they mean that the Patton 48 ought on the average to live a little longer and function somewhat more effectively than the Soviet T-34; but it doesn't mean that the Patton or the men in her are invulnerable or that the difference is more than one of averages. By expending a few more T-34s (and the men in them) the Soviets can get the same military results as we can by expending a few less Pattons. It is the averages only which show the difference, and how is one in fact to average life against costs?"

### Superior Camouflage

Observers from the NATO countries, who attended the recent Allied maneuvers held in Germany, were particularly impressed by the efficient camouflage which has been developed. The veteran war correspondent of the *London Daily Telegraph*, A. J. McWhinnie, wrote:

"Not since the war in the Pacific, when the Japanese proved themselves artists at concealing ground movements, have I seen such clever camouflage. The concealment of the tanks was particularly first class. I travelled hundreds of miles day and night in the battle area and only discovered on wall maps at Headquarters how many tank units I missed."

Three British armored divisions, equipped with Centurion tanks, demonstrated new ideas in delaying superior attacking forces. They were so effective that General Sir John Harding, the British Commander in Germany, said:

"I believe it possible not only to hold up enemy forces of superior strength but also to throw them back."

Sir John Harding's plan for stopping a major onslaught is for armored units to harass and delay the attackers while Allied infantry, together with some armored units, retires into "hedgehog" strong-points. As the main armored divisions of the Allies make a fighting withdrawal, the pursuing invaders are counterattacked from the flanks and rear by the armor in the "hedgehogs." If carried out properly, this maneuver can throw a blitzkrieg off balance, and give the initiative to the defenders.

### Tank Production Up

In the 7th Quarterly Report of the

Office of Defense Mobilization to the President it states that production of tanks and other combat vehicles is running seven times higher than a year ago. The first production models of the giant heavy tank will be delivered before the end of the year. The Army's newest medium tank, the T48, which is to supersede the M47 tank, was put into quantity production by one contractor during the quarter and another contractor is ready to go into production during the coming quarter. The T48 tank carries heavier armor and introduces a new low silhouette with an egg-shaped contour which will appreciably reduce its vulnerability to enemy gunfire.

### Retired Armored Commander Dies

Brigadier General Sereno R. Brett, 60, the first chief of staff of the United States Armored Forces, passed away on 10 September after a long illness. General Brett arrived in France aboard the first American troopship in World War I and was second in command of the United States Tank Corps under then Lt. Col. George S. Patton. An accident while on maneuvers forced his retirement from service in 1940.

### Tank-Lifting 'Copter Test

It has been reported that Howard Hughes' gigantic jet helicopter, designed to lift tanks and heavy weapons, was recently tested. This ship, looking something like a cross between a lumber carrier and a helicopter, has a 136-foot spread of its two blades.

### Attention, Comptroller!

Savings to the taxpayer of many thousands of dollars, plus greatly reduced "deadline" time for Army Ord-

## "THE PROOF IS IN THE PUDDIN'"



**BEFORE . . .** In the Jan-Feb 1952 issue of *ARMOR* a problem on tank evacuation in the "What Would You Do?" article was questioned by several readers. For the non-believers, here is a photo of an actual vehicle salvaged on the Korean battlefield, and returned to Japan for rebuild.



**AFTER . . .** Here the same vehicle is shown after rebuilding at the Tokyo Ordnance Depot. The tank was stripped to the hull and each assembly was rebuilt and reassembled, with the finished product bearing only the old USA number to identify it. Major Ralph C. Wardlow sends us the story.



nance equipment will result from a newly instituted "direct exchange" system at The Armored Center.

Under the plan, now in use in Korea, all a motor or supply sergeant must do to get a replacement for a defective part is to exchange it at Armored Center Ordnance for a part that works.

Colonel John M. Henderson, Jr., Armored Center Ordnance Officer, said that identification cards have been issued to those personnel whose duties require the turn-in and receipt of parts. The cards, issued by the individual unit commander, are a check to see that no abuses of the system, or of Army property, take place.

Explaining the lengthy procedures formerly required to get such a simple item as a carburetor, he said it was "once necessary to turn in the defective sub-assembly, submit a requisition for a replacement part, and then sit back for as long as two months waiting for it to be available.

"The faulty carburetor itself would be inspected, and then shipped to an ordnance depot several hundred miles away.

"If you consider just how much it costs," Col. Henderson explained, "for clerical work alone, not to mention the actual cost of crating and shipping something as small as a carburetor, then ship it back when it's repaired, you can see how much this system is going to save the taxpayer."

Under the new setup, repairs are made right here at Armored Center Ordnance Shops, and the part is back in the supply lines in less than a week's time, and often the same day.

A tank without a carburetor won't run. And it often took a month or more under the old system, to get a replacement carburetor. Now, a defective mechanism can be found in a tank in the morning, exchanged for a new one at Armored Center Ordnance, and the

tank can be running again before the duty day is over.

Highly skilled technicians and mechanics can be kept steadily occupied day after day, where before they often worked sporadically. Units, knowing that replacement parts are immediately available, keep vehicles at higher mechanical standards by promptly replacing defective parts.

The picture is not only true of carburetors, but of all locally repairable sub-assemblies of ordnance equipment. Glass and canvas, for example, are available in bulk supply so that cracked windows and torn tarpaulins can be immediately replaced. Before it was a lengthy process of requisition, classification and waiting. While waiting, the vehicle sat immobile.

"There are still a few problems to be worked out," Colonel Henderson said, "but we're more than pleased with the results so far. The plan applied is part of the Cost Consciousness Program."

#### **Liaison Officer Assigned to French Armor School**

Lt. Col. Edward McC. Dannemiller has been assigned to TAS, Fort Knox, with duty at the French Armor and Cavalry school at Saumur, France. This establishment of personal liaison between the centers of Armor teaching of the French and United States Armies is another link in the chain of defense of the free nations.

#### **New British Chief of Staff**

General Harding, commander of the famous British 7th Armored Division, the original "Desert Rats," took over as Britain's new chief of the Imperial General Staff on 1 November 1952. Harding and his 7th Armored Division tank-men were in the forefront of the entire pursuit of the Axis Army across Africa from Alamein to Tripoli. Harding was wounded near Tripoli but soon

recovered and rose rapidly in rank till at the end of the war he was in command of the Allied Forces in Italy. In 1947 he became General Officer-Commanding-in-Chief, Southern Command and was Commander-in-Chief, Far East Land Forces, 1949-51. He was appointed as Commander-in-Chief, British Forces in Germany, during 1951, serving until 1 November 1952.

#### **Soviet Mechanized Units**

In a recent dispatch to the *New York Times*, Drew Middleton, Chief of the German Bureau, reported:

"According to experts on the Soviet military structure, there is no indication that new tanks have been sent to East Germany. But it is known that of the twenty-two field divisions there, eighteen are tank or mechanized divisions.

"The Soviet mechanized division is an organization akin to the German panzer grenadier division of World War II. It has fewer tanks than an armored division but more than an infantry division and its infantry units are completely motorized."

#### **Superior Rating**

Fort Hood's rugged Tank-Infantry Combat Course was conquered for the first time last week when a platoon of reinforced armor battered a simulated enemy for a "superior" rating in First Armored Division platoon tests.

The reinforced platoon was taken from Company "C" of the 100th Heavy Tank Battalion and Company "D" of the 634th Armored Infantry Battalion. Second Lieutenant Talmadge B. Gladson of Company "C" of the 634th was in command.

Previously a platoon from Companies "D" of the 4th Medium Tank Battalion and the 702nd Armored Infantry Battalion, commanded by Second Lieutenant Joseph T. Crafta, received a rating of "excellent plus."

## **The U. S. Armor Association and ARMOR Magazine**

**announce the move of the headquarters and  
editorial offices effective on October 1, 1952 to**

**1727 K STREET N.W.  
WASHINGTON 6, D. C.**



# For Garry Owen and Glory

by FIRST LIEUTENANT JAMES L. MORRISON, JR.

**A**T the outset I freely admit that, unlike most lieutenants, I do not have a ready solution for all the woes of the army, nor do I pretend to grasp the big picture in its entirety; I do feel, however, that the most is not being derived from our most precious military commodity, manpower. A sure-fire bet is being overlooked.

Like every other officer of the line, I am vitally interested in, and directly concerned with, the conservation and effective use of military manpower. It takes no TIP Talk to convince me that in order to ensure the success of our nation on any potential battlefield, we must exploit to the fullest the fighting ability of our soldiers. We can afford to overlook no single factor which might increase this fighting ability. Yet I am uneasy; I fear that our present system of training and replacement is constructed with a missing pillar, this pillar being the instillation of a sense of unit pride, of oneness and of belonging, among our fighting men.

My thoughts along these lines have been influenced mainly by two sources. The first of these influences is my recent return to the ZI after forty-two months of foreign service in a non-combat theater. I spent this entire period as a platoon leader, a company executive officer and a company commander in a reconnaissance battalion. Constant contact with Regular Army; with inducted enlisted men under the peacetime conditions of 1948-50, during the rotation freeze which followed the outbreak of war in Korea; and finally, during the mass turnover which accompanied the thawing of the freeze, has left me

with certain impressions and opinions concerning what makes a line outfit "tick."

During my period of service with it, the battalion varied widely between these extremes: understrength to overstrength, overstrength to understrength and understrength back to overstrength again.

For the length of about twelve months, however, this fluctuation levelled and, quite accidentally, we were left with a workable, efficient, present-for-duty strength. No new men came in; no old ones went home. It was during this period of stability, and the contrasting period of stormy change which followed it, that I formed my beliefs.

During the freeze the men in my unit were certainly no "Plaster Saints." Our equipment, weapons and vehicles were strictly of World War II vintage; most replacement parts could only be found on unfilled requisitions, and finally, we suffered the agonies of a change in TO&E by the economical but nerve-racking expedient of taking the old equipment and making it fit the new organization as best we could. In spite of these challenges to operational efficiency it is my belief that during that period the battalion reached and maintained a peak of combat capability only short of that gained by actual bleeding under fire. Had we been committed to action as a unit at that time, I am positive that we could successfully have accomplished any mission within our wide range of capabilities. I base this belief, not on any egotistic opinion of superior leadership by myself or by the other officers and non-coms of the battalion, but on a sense of *esprit de corps* which existed among all the members of the organization. All of us, from the CO to the company day room orderlies, felt a pride of belonging, and we all benefited from its consequences. The addi-

tional work entailed by maintaining ancient equipment was accomplished; the obstacles of training under difficulties imposed by climate and terrain were met and overcome.

Just prior to my own rotation the freeze suddenly thawed. Old men went home; replacements came in droves. Master sergeants were exchanged for recruits. Our operational efficiency took a sharp nose dive, and in spite of the conscientious efforts of all concerned, confusion, at times, was in sole command. I left the unit with the belief that I had witnessed something unique. My illusion was short-lived. Upon my arrival Stateside I quickly discovered that what I had believed to be an isolated incident of change and confusion was really the commonly accepted norm of operation in most units. "Here today, and gone tomorrow," had become the Battle Cry of the New Army.

Before proceeding let me state that in no sense of the word am I attempting to deride those who are forced to work under these conditions of upheaval. On the contrary, that they have been able to accomplish anything at all in the way of efficient operation is a high tribute to their intelligence, loyalty and intestinal fortitude. My point is this: had a different system of training and troop rotation been used, a lot of duplicated effort would have been saved and a lot of headaches would have been avoided. As it is, our units, regardless of component, have all been attacked by an insidious disease which is busily sapping away combat efficiency. This disease is apathy toward unit and comrades. What are its symptoms, and, most important, what is its cure?

The answers to these questions are found in my second source of thought-influence, Colonel S. L. A. Marshall's book, *Men Against Fire*. Within the

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few pages of this remarkable treatise are found time and again references to the fact that men work and fight best when they are imbued with a sense of belonging to, and a sense of pride in, some particular organization, a unit in which they are recognized as full-fledged human beings with individual personalities, capabilities and limitations. Again and again do we find Colonel Marshall pointing out how this feeling of *esprit* cannot fail to transform a drab, unhappy mob of men in uniform into an efficient, proud, enemy-killing, hard-dying military unit. When this feeling is in evidence, only average leadership will suffice to ensure success. On the other hand, "Stonewall" Jackson himself probably would not have been able to do much with any unit lacking it.

Of course, neither my own nor Colonel Marshall's observations are startling or novel. Every commander since Leonidas at Thermopylae has recognized the need for, and has done all in his power to foster, *esprit de corps*. What is startling is the fact that while we pay lip service to the urgent need for combat efficiency among our fighting units, we are ignoring the bedrock foundations of this efficiency.

History is replete with examples of everyday, common men who, when banded together in some particular military organization, became "Demons from Hell" in battle. Caesar's Tenth Legion, Patton's Third Army, "The Black Watch," "The Afrika Korps" and Jackson's "Foot Cavalry" are only a few random examples of the phenomenal success worked by *esprit*.

The men in these units came, as must the soldiers of all armies, from the homes of the people. Most of them were strictly non-professional citizen soldiers. Some perhaps were unmoved by any deep sense of patriotism. Propaganda to the contrary, they were neither physical nor intellectual supermen. Only spiritually were they. They fought like men possessed for the pure and simple reasons that they were among comrades whom they knew and trusted and because these comrades were also fighting like men possessed.

Is such a feeling of unit pride, of devotion to comrades, obsolete? I think not. It is my belief that it still lives.

One thing is certain. Such a spirit can never be nurtured alone by PX Soda Fountains, USO Shows, forced pampering or similar luxuries. Neither Stuart's nor Custer's troopers ever knew these things. Yet they were far better men in a fight than the modern lad who goes AWOL or psycho because of his "hateful old First Sergeant."

What, then, is the answer? How may we continue to field, as of dire necessity we must, men whose enemy-killing capacity gives maximum value received for time and money expended in training? In short, how can we manufacture soldiers rather than just men in uniform?

I believe that the problem can be solved in the following way. As soon as possible after the introduction of an individual into the Army, put him into an operational tactical unit and leave him there until he is separated from the service.

### An Example

As an illustration of such a system in action let us examine the military training and troop rotation policy of a sister nation. Our ally, Britain, is equally concerned with the preservation of democracy, home and the sanctity of mother as are we; through necessity they are even more mindful of military economy than are we. And, most important, their long lists of successes in arms cannot be denied by even the bitterest Anglophobe. Yet for generations, since the decline of the mercenary and the advent of the citizen soldier, "Tommy Atkins" has trained, gone to war or foreign service and returned home with the same unit he joined as a raw recruit.

Now let us see how such a plan of training and rotation, tried by time, might be tailored to fit our own "New Army."

Draftee John Q. Jones, having been selected by a board of his friends and neighbors, and having received his "Greetings from the President," reports, with a group of contemporaries not knowing "Left Face" from "Check Intercom," to Headquarters, 111th Armored Cavalry Regiment, Camp Pike, Utah. Upon arrival at the 111th, the group, still in civilian clothes, is greeted and oriented by the "Old Man." He gives them a friendly, genuine welcome but makes it clear that they have become members

of a time-honored, efficient, tactical outfit and that regardless of their personal feelings concerning the matter, the new recruits will be expected to learn to soldier to the best of their abilities. In short, the men are given a welcome and an explanation of what is to be expected of them, not an apology that they have been drafted.

After this brief talk the Adjutant divides the group into smaller increments and turns each of these over to a previously designated noncom who represents the new parent company. Jones goes to Company "A"; he is to follow that guidon until the day he leaves the military service.

From the company supply room he draws a weapon and the equipment necessary to train with. He is then assigned to a TO&E slot in a recon platoon, is given a bunk, helped to prepare and stow his equipment, fed and bedded down.

The next morning Jones begins a training cycle equally divided between general military subjects and his own military specialty, the latter having been temporarily determined by the needs of the platoon in conjunction with any special aptitudes which Jones might possess. The cycle progresses in the normal basic training fashion until Jones is finally ready to take his place as a trained, operating member of the platoon. If necessary, specialty training might be changed to fit the need. The important factor is that Jones is being constantly trained and supervised by those whose efficiency reports and, later, whose lives, are directly dependent upon his proficiency.

Concurrently, our friend is painlessly and practically subconsciously indoctrinated with the history of the 111th. Murals on the Day Room walls depict some of the more fascinating events of the unit's past. From time to time officers and men who have been long-time members explain the various traditions, and on the day when his Recruit status is ended and he is granted his first pass, he is presented with a set of the 111th's crests to wear on his new dress uniform. Therefore, without even thinking about it, Jones gradually comes to believe that Company "A," 111th Armored Cavalry Regiment is the finest military organization which has ever existed. Moreover, he feels that he himself has a direct, unavoidable



responsibility to help maintain the honor of his regiment.

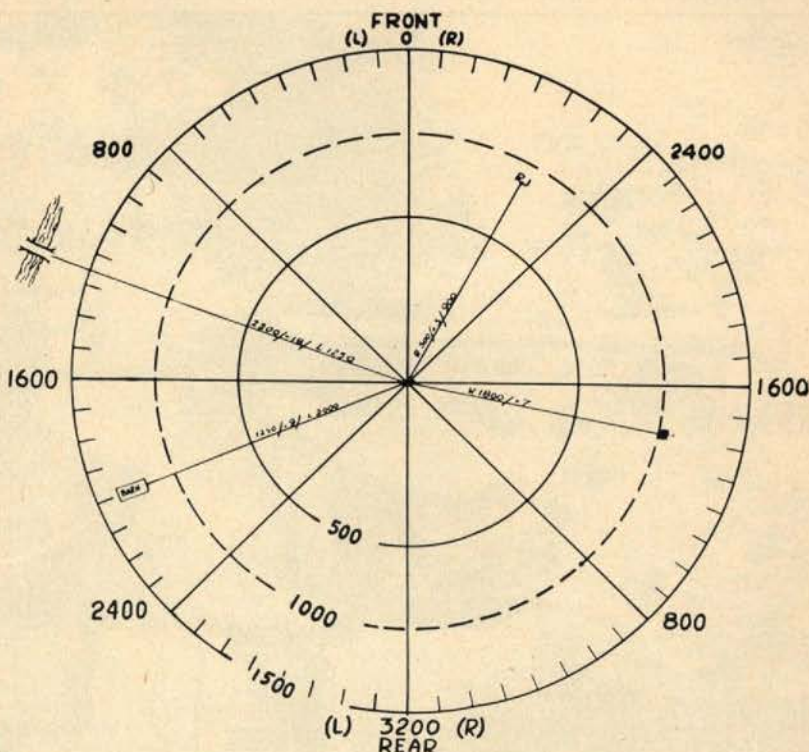
From the time of his induction Jones has been told by his officers and noncoms that sooner or later the 111th will be going overseas either as an occupation force or to combat in Korea. Consequently, when the day does come and the regiment is alerted, neither Jones nor his comrades are beset by wild fears or dark apprehensions. To be sure, none of them particularly relish the thought of combat and the accompanying possibility of dying, but they are comforted by the knowledge that since they have to go, they will be fighting side by side with old comrades.

In due time the 111th arrives in a combat zone and takes over the sector, vehicles and equipment of a sister unit which is due for return to the ZI. A little later the 111th is committed for the first time. How does our friend feel when the first ricochet screams past him? What does he think when he sees his best friend ripped apart by shrapnel? He is shocked and afraid, of course, but he still reacts to the commands of the same men who taught him "Right Face," and he knows that he is not fighting the war alone. After a while the initial shocks and impressions wear off, and he arrives at a full realization that his job is to kill as many of the enemy as he can in the most effective, quickest way possible. Jones has become a soldier.

Eventually the 111th fulfills its combat obligations. A replacement regiment arrives and takes over. Jones and his comrades board a transport and after a time arrive back at Camp Poke. Here, after the discharge of time-expired men and induction of new trainees, the unit begins another cycle.

Jones is one of those whose time is up. He is mustered out and returned to civil life. As he leaves the Main Gate at Camp Poke and heads for home, the chances are that Jones goes, not with a feeling of resentment toward the Army or with the belief that the world owes him a living for having fulfilled his obligations to the government, but rather with a feeling of deep pride in the fact that he has served his country to the best of his ability in an organization whose name will forever stir fond memories within his heart.

## FOR TANKERS — A NEW RANGE CARD



**A** NEW range card has been conceived, developed and tested at Camp Polk by Lt. Col. Taylor C. T. Hayes, formerly commander of the 322nd Tank Battalion and now a student at Command and General Staff College. Col. Hayes has adapted the information in FM 17-12 into a design that makes an excellent card for the use of tank commander and gunner.

The card is a replica of the azimuth indicator's inside dial, with cardinal points indicated by appropriate numbers. One hundred mil ticks on the outside range line assist the commander or gunner in interpolation of azimuth lines to various target designations. Gunner or commander, in recording targets of opportunity for firing, need enter only the azimuth in mils, left or right, the quadrant reading for the target and the range as determined in yards.

The card provides a quick, convenient method for recording possible targets immediately upon occupation of a position, thus having data for later reference when a tactical situation, night, or obscure weather make use of direct fire equipment impossible.

At a demonstration of the card's use at Camp Polk, before several tank battalions and the Armor Officer of XV Corps, Col. Hayes' card was received enthusiastically. The card idea was forwarded to Armored Branch G-3 OCAFF. There it was studied by Maj. Gen. J. H. Collier, Inspector of Armor. Gen. Collier, impressed with its possibilities as standard equipment in all armored units, forwarded the card and accompanying data to the Armored School for evaluation and suggestions.

The Armored School reported favorably on the card, making two recommendations for small changes. It was suggested that the size of the card be reduced for easier handling, and that the range circles on the original card, of 500, 1000 and 1500 yards, be changed to 400, 800, 1200 and 1600 yards.



# HOW WOULD YOU DO IT?

## FIELD EXPEDIENTS

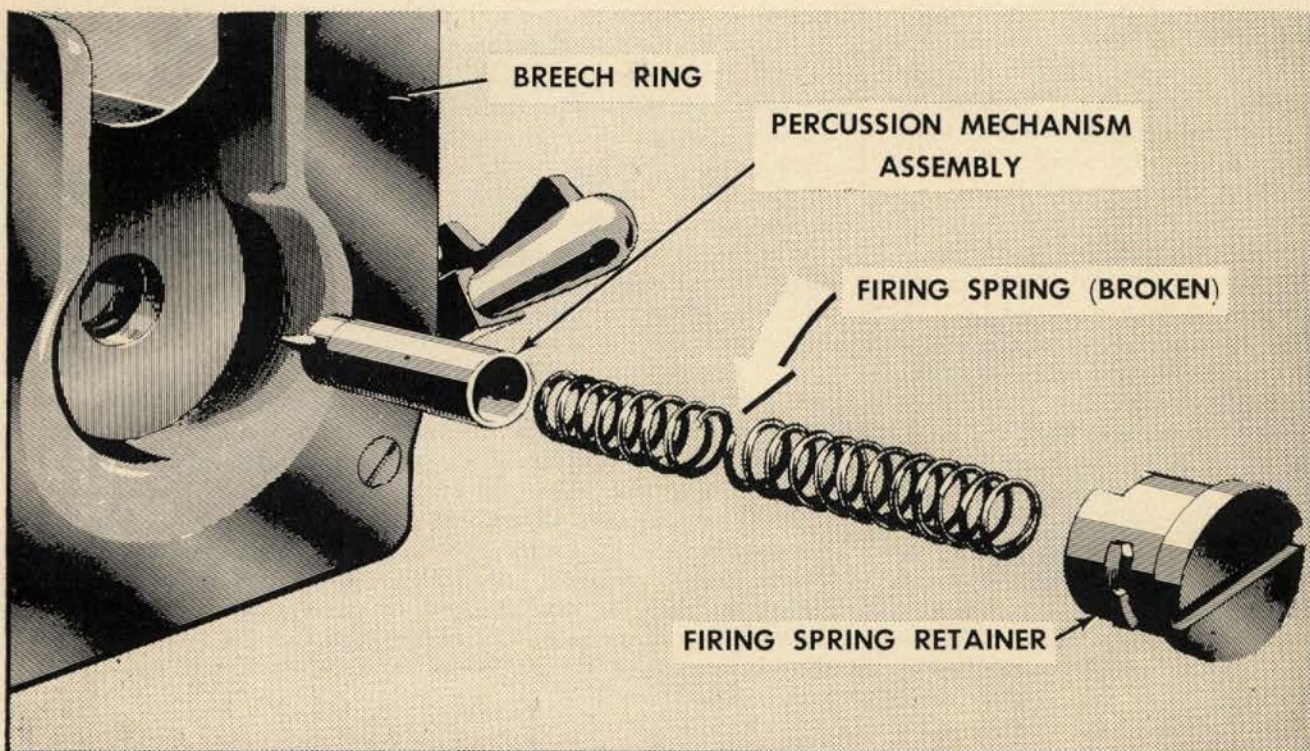
AN ARMORED SCHOOL PRESENTATION

AUTHOR: MAJ L M KIRK

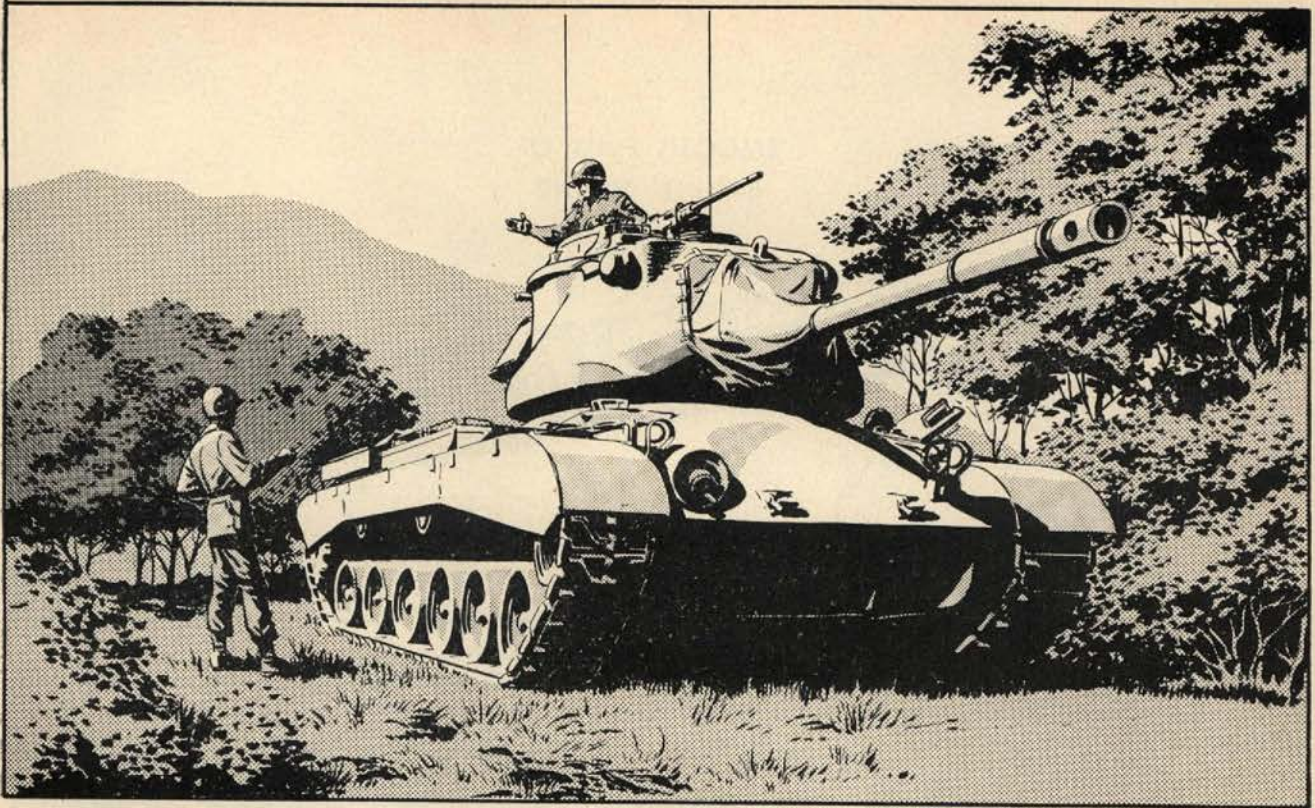
ARTIST: MSGT W M CONN



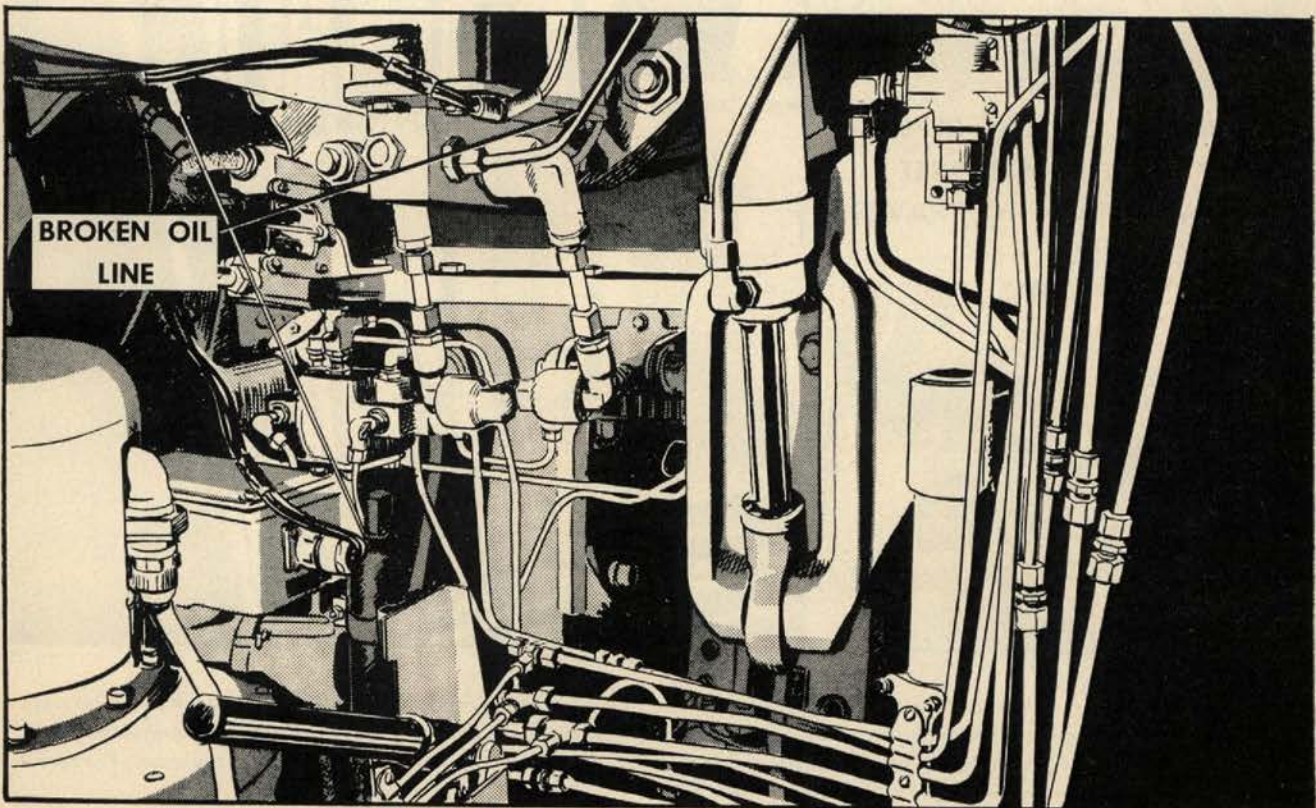
**GENERAL SITUATION A:** You are the platoon leader of a platoon of M46 tanks. Your platoon is scheduled to jump off in the attack in a few minutes. One of your tank commanders runs up and reports that the firing spring of his 90-mm gun is broken and that he cannot fire. No spare firing springs are available. You cannot afford to lose the firepower of this tank. The gun must be fixed so that it can be fired. How would you do it?



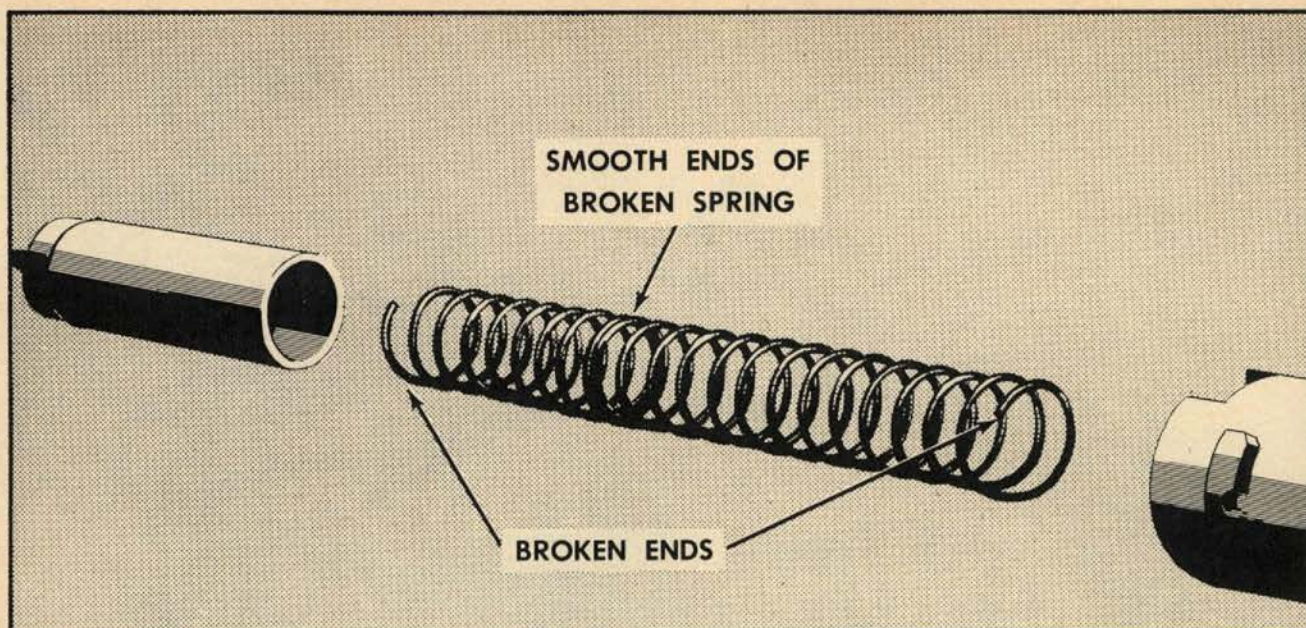




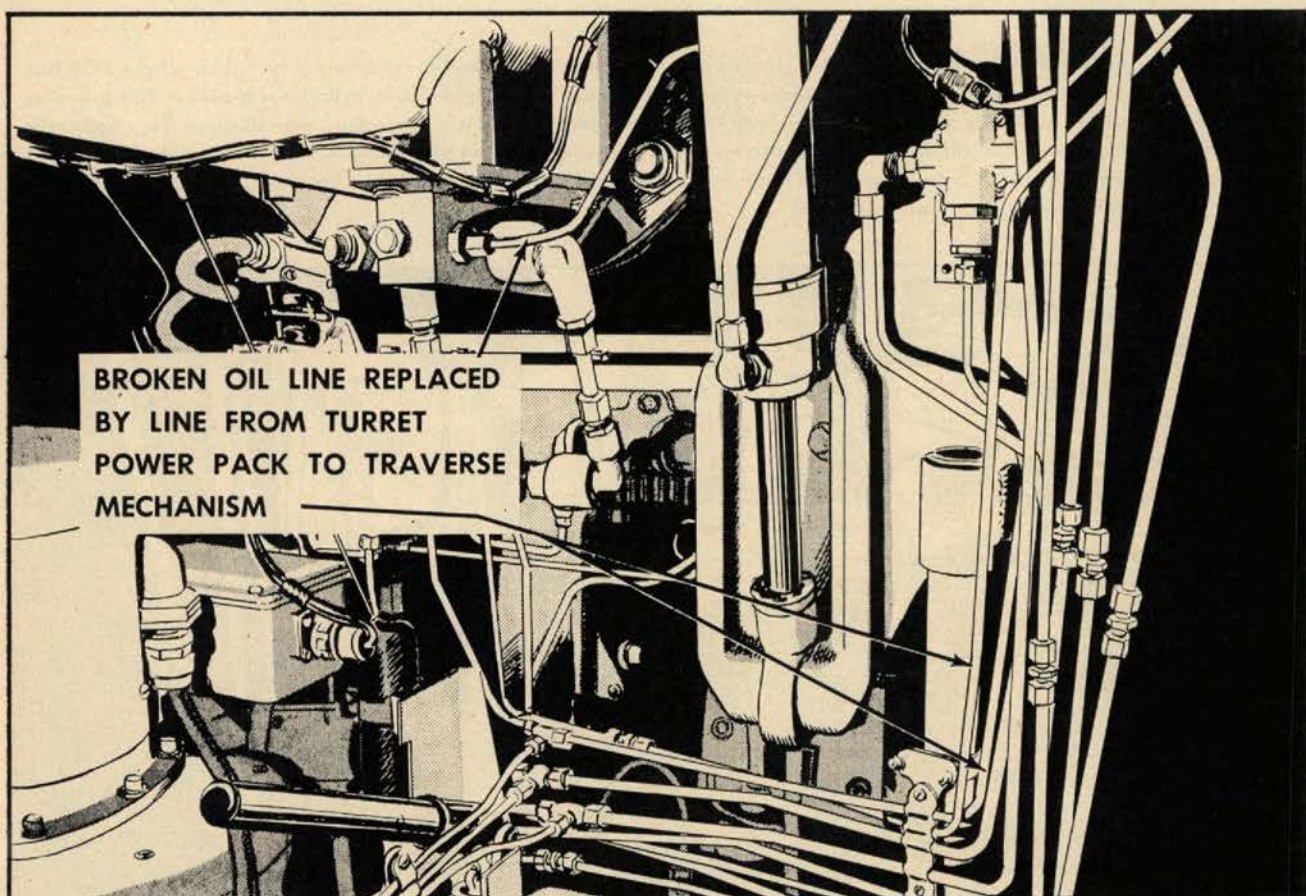
**GENERAL SITUATION B:** Your platoon of M47 tanks is attached to an infantry battalion whose MSR has been cut by an enemy enveloping force. Your gunner reports that an oil line to the elevating cylinder is broken. This prevents elevating the gun either manually or in power since both means are hydraulic and are dependent upon this line. Your hydraulic lines to the traversing system are still intact and you also have a mechanical means of traversing. A turret artillery mechanic from your company is available but Ordnance personnel with replacement oil lines cannot reach your position. A field expedient can restore your elevation control. How would you do it?







**SOLUTION A:** Use the broken spring. By putting the two smooth ends of the spring together, with one of the broken ends in the firing spring guide and the other in the firing spring retainer, the spring can be used until a replacement can be obtained.



**SOLUTION B:** Select and remove a line of suitable size and length running from the turret power pack to the traverse mechanism. Use it to replace the broken line. This will deny all power operation in the turret, but will permit manual elevation of the gun and manual traverse of the turret. The turret motor should not be turned on until the missing line is replaced. The openings in the line should be covered to protect the system from dirt.



# FROM THESE PAGES

## 60 Years Ago

But what results are we to expect from shock action? Take first a peace experiment. In a report of the German field maneuvers of 1879, we find as follows: "A regiment of lancers (400 strong) took advantage of cover afforded by the ground to charge in flank four battalions of infantry (4000). The surprise was so complete that the cavalry arrived within 200 yards of the enemy's flank in full charge before it was perceived, and was upon the infantry before any effective fire could be delivered." As a result of this charge Count Von Moltke decided that three battalions were placed *hors de combat*.

Thus it was decided by a most eminent strategist—one who had conducted two great wars to a most successful termination—that 400 mounted men had practically destroyed a body of 3000 infantry, whereas, if they had attempted to use dismounted action they could not have been expected to overthrow more than a company of 250 men.

*Use of Cavalry in War of 1870-71*

LT. R. G. PAXTON

## 40 Years Ago

Left camp 8:58 A.M., returned to camp 10:28 A.M. Maximum altitude 2,927 feet.

Proceeded to Zoar Bridge via Shelton thence via Shelton and Housatonic River. No troops observed between Stratford and Derby other than a small wagon train of about ten wagons marching north towards Shelton on Nickel's Farm Shelton Road. No troops observed between Shelton and Zoar Bridge. Hospital detachment observed in camp at Zoar Bridge on east side of river. Another small detachment, evidently of the Hospital Corps stationed at Stephenson.

At about 9:45 A.M. a small mounted detachment was observed passing back and forth on the Zoar Bridge-Berkshire Road. At the same time a large force of infantry, estimated strength one brigade, was observed in line of battle on the south side of the Zoar Bridge-Berkshire Road and about a half mile east of the cross road marked "A". About a half mile north of the infantry position a small group of horses and vehicles were observed but due to the haze it was impossible to accurately determine the character of these troops. On the left flank of the main body of infantry, south of Hill 745, a small body of mounted men was observed. Near cross roads marked "A" another small detachment of mounted troops was seen. After circling over the troops in position east of cross roads "A", reconnaissance was continued to Berkshire and Sandy Hook. At 9:50 a wagon train accompanied by a small detachment of mounted men was seen moving south on the Berkshire-Cold Spring Road.

*Report of Aeroplane Reconnaissance*  
August 13, 1912

LT. B. D. FOULOIS

## 25 Years Ago

The three great advantages that the cavalry of today has over the cavalry of the past are the co-operation of the air corps, utilization of the radio and increased fire-power. The air corps will render tremendous assistance by pointing out the direction in which the main cavalry effort must be made and by taking over in general the distant reconnaissance of the enemy, thereby making a great saving in horse flesh for the

cavalry. Furthermore, in many other phases of campaign and of combat the close co-operation of air corps and cavalry is essential and will be of marked advantage to both.

The radio, soon to be greatly improved, will enable the cavalry commander, even though operating far to the front in hostile country, to send information promptly and surely back to higher headquarters, thereby saving both time and horse flesh and further assisting in preserving mobility.

The development and adoption of semi-automatic rifles or carbines, together with additional machine guns, will greatly increase the fire power of cavalry. It will make the cavalry better fitted than ever to seize and hold positions far in advance of the rest of the army and to act with great effectiveness in every phase of combat.

The Chief of Staff has recently decided to incorporate in each cavalry division an observation squadron, air corps; a tank unit and, as soon as developed, an armored car unit. He has further approved the development of anti-tank weapons appropriate for cavalry use and the eventual replacement of the present Springfield rifle by a semi-automatic rifle or carbine. These decisions, in addition to the recent creation of a cavalry corps of three divisions—largely skeletonized, to be sure—forecast a great advance in cavalry power and general effectiveness.

The additional effectiveness of the cavalry arm will be secured without impairing the cavalry's greatest asset—mobility. Hand in hand with mobility must go cavalry co-operation with other arms, especially the air corps, while full use must be made of the latest developments in aviation, communication and fire power.

Such a cavalry, the cavalry of today, will surely make its value felt in any war of the future and, most particularly, in any war in which this country may be engaged.

*Cavalry of Today*

MAJ. GEN. H. D. CROSBY

## 10 Years Ago

Successful resistance to the enemy tank attacks is also facilitated by isolating the German infantry, which usually advance behind tanks. Concentrated fire from Soviet artillery and mortars has pinned the infantry to the ground for hours. Today the German infantry advances *between the tank echelons*. When the infantry meets Soviet fire now it scatters, not backward, but sidewise.

Time and again the Germans have tried to advance with their infantry in front of the tanks, with fire support from the rear; but this method has not succeeded in getting the infantry through the Soviet main line. On the contrary, such a battle formation restricted the maneuverability of the panzers and led to greater losses.

Heavy losses have been inflicted on the enemy tank concentrations by the Soviet bombers, Stormoviks, and by long range artillery which many times have dispersed the panzers at points of concentration and on the march. This compelled the Germans to remove the starting positions of their tanks to a distance of four, five and sometimes even eight kilometers from the Soviet main line of resistance.

*Panzer Tactics in the Mozdok Area*

MAJOR S. SLESAREV  
Red Army



## **Obsolescence or Renaissance?**

by **LAMAR McFADDEN PROSSER**

**O**NE of the most vital questions now facing members of the Armor branch is whether recent technical developments in weapons have increased the value of armor or have condemned us to follow the difficult trail of our Cavalry predecessors.

Infantry pride in its improved individual antitank weapons has led to some extravagant claims and to the usual pronouncements of the death of armor. The successful production of a tactical atomic gun was heralded with the same muffled drum beat for armor: "Massed tank attacks are a thing of the past."

This brand of thinking should come as no surprise to Armor soldiers, since there is certainly nothing very novel about it. Armor came into being against protest. It was first tried in battle against protest. It became the decisive arm of combat over protest and it shortened the Allied campaign in Germany even after Winston Churchill had given it up for dead with the statement, "We have too much Armor—tanks are finished." In the weeks before the outbreak of fighting in Korea we heard much about defensive weapons and the statements had the tank and tank warfare as obsolete or obsolescent.

What is most alarming, and what does indicate a critical condition, is the fact that there has been little or no spirited defense from the members of the Armor branch. Now, when all weapons and all tactics are being recast in the atomic mold, we must have a renaissance of tactical ideas

for the use of armor or resign ourselves to obsolescence.

When we examine the new weapons and consider their effect on armor, the prospects are far from hopeless. Many changes must be made. But, while a completely new doctrine must be worked out for the employment of tanks, the characteristics of our weapon appear to be almost ideally suited for adaptation to the new "scientific" warfare. What is needed first is a reappraisal of the capabilities of the tank. Then we must formulate a revised tactical doctrine to express those capabilities.

Not only must the new tactical concept take into consideration the increased power of bombs of the atomic type but it must consider the possibility of enemy control of the skies over the fighting front. The result surely will be wide dispersion on the ground. Since, with atomic weapons, a penetration is possible anywhere, our defensive dispositions will assume tremendous depth and reserves must be mobile and not concentrated. What we should strive for is not a chain of small strong points, but a chain-mail of semi-independent and self-sustaining combat teams. This protective dispersion must be combined with the capability for rapid maneuver and local concentration, should the tactical and the air situation permit—a role tailor-made for armor.

Since mobility is all-important, the speed of maneuver now required will force all ground troops to be mounted in tracked vehicles. Divisions of foot troops are now too clumsy, and to assemble them would result in prolonged concentrations which would be an invitation to disaster. Motorized infantry would be completely road

bound, and, therefore, impractical. Roads must be avoided almost entirely by units larger than battalion in size.

This fact is evident from a study of the operation of the German panzer forces in the last two years of the late war. Faced by tremendous enemy air superiority in 1944, the German Panzer-Lehr Division found movement entirely impossible, even under cover of darkness. In something like one month of action, most of which consisted of a move to the front, this entire division was destroyed. Its armor vehicles were completely annihilated; its combat personnel were killed, wounded, captured or scattered; its communications were destroyed. The commander, under interrogation by the Air Intelligence Section of the 9th U. S. Air Force, stated that he himself escaped with only the clothes he wore. These facts are worth careful consideration because this division was operating under adverse conditions which American forces have, mercifully, never had to endure.

Today, we face an enemy with the ability to obtain air superiority. Consequently, to avoid such utter dissolution as that suffered by the Panzer-Lehr Division, our forces now must operate in smaller tactical groupings. They must be completely mechanized to escape the destruction which would assuredly result from confinement to the road net.

The time has come to mechanize the entire ground forces. In World War II we took the first step towards this true mobility by motorizing the infantry division. Today this limited mobility is no longer adequate. What we will have is evolution from foot troops through trucks to tracks.

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**MAJ. LAMAR McFADDEN PROSSER**, Armor, is Unit Instructor of the 149th Medium Tank Battalion, California National Guard, Salinas, Cal.



Our present mechanized artillery is also adaptable to this type of employment. Already, self-propelled artillery has been proven in Korea to be more flexible, faster and more efficient than traditional towed guns. The greater mobility of self-propelled artillery will gradually force out the less manageable towed equipment and artillery will be incorporated into the new type mechanized combat teams. As Hanson Baldwin has said, "Gradually, the specialized type of divisions—Armored, Infantry, and Airborne—will tend to merge into one."

As to which characteristics will predominate—Armor or Infantry—there can surely be little doubt. The adjustable combat command organization of armored divisions needs very little modification to fit the requirements exactly. Mission-type orders now used by Armor will be necessary in the fluid situations which the new dispersion will produce. The mobility, and more essential, the controlled dispersion now practical with armor vehicles is made essential for all ground troops by the mass-destructive weapons. The protection afforded by armor against small arms as well as against heat, blast and radiation of atomic shells and bombs is now more important than ever. It seems obvious that the new model combat unit will be armor.

It is quite possible that divisions of any type, as they are now organized and employed, will prove too large and too difficult to control. The division as a tactical unit may give way to completely mobile combined arms combat teams. Each of these teams should be capable of independent operations or of combination with other teams in varying numbers under a corps headquarters.

The smaller sized combat teams, stripped to the minimum essential fighting units, will simplify the problems of air transport and should make airborne operations really feasible, at last. The fact that airborne operations in World War II were generally unsuccessful does not mean that effective operations will not develop. If the armor elements of our Army can be made smaller and adaptable to air transport, there is every reason to think that airborne operations will be important and decisive in the future.

If this gradual evolution to armor

is to take place we must reverse the trend toward larger and larger tactical units in progress since World War II. Instead of adding armor to infantry divisional organization we should replace the infantry wheeled vehicles with armored, tracked vehicles, and pare down the units to a hard combat core. Headquarters elements on all levels must be cut to size and certainly they must be completely mobile too. Dispersed forces with wider frontages and greater depth in both attack and defensive formations will force the command echelons to remain highly mobile in order to maintain contact and to carry out over-all supervision of the fight. Headquarters will again be "in-the-saddle" as in the days of Sherman. German General Heinz Guderian achieved this simplicity; indeed, he depended on it, both in France in 1940 and in Russia in 1941. Armor, even in its present state, is capable of such employment.

#### Junior Leadership

When we break down the basic tactical unit to elements of combat-team size, a greater importance will accrue to small unit leadership. Our training must place more stress on the principles of war rather than technique. Oversimplified formulas will be dangerous. Junior officers will have to act flexibly rather than within the confines of set piece operations. A true understanding of Liddell Hart's concept of "fluidity-of-force" and "controlled dispersion" might be much more practical training than many hours of THE TANK COMPANY IN SPECIAL OPERATIONS since only a very few of the innumerable special situations could ever be covered in any course of instruction.

In this connection, a higher order of discipline is required of soldiers who must operate in the more or less isolated vehicles. Automatic and arbitrary obedience is now less important than voluntary reasoning and compliance with the general plan of the commander. Discipline, in the future, must work toward achieving independent but cooperative efforts in support of the common objective. Aggressiveness and understanding of the fundamental principles will be the most desirable qualities of the junior leader.

Even harder to accomplish than tactical dispersion will be the elimination of tempting supply targets.

The service forces, particularly supply installations, can no longer be permitted to build up large dumps and depots. Air supply may help to overcome this problem, but it is no cure-all, for the effectiveness of air supply is still somewhat dependent on the weather and it is always contingent on air superiority. Air supply columns will require fighter protection and many small landing spaces and drop zones in the forward areas to avoid concentrated supply build-up even at the front. Supply channels may have to be from units as small as battalions direct to the base supply in order to avoid large intermediate supply points.

The base supply installations will, in all probability, be underground and they may be as far behind the front as the Zone of the Interior. When it is remembered that transport planes already have spanned the Atlantic in a few hours' time this is not as futuristic as it may seem.

Much of a unit's supply requirements will be automatically resupplied, thus reducing the administrative load on skeletonized combat headquarters. The base must largely anticipate the needs of the combat teams. As supply will become difficult, so supply discipline will become drastically tight. This sort of restriction will be unnatural for American soldiers and the conservation of their meager rations of ammunition, food and fuel will be one of the commander's greater problems.

In a war of movement the reorganization here recommended for the infantry will give it a rate of march which will equal that of any other branch and will make possible the truly close cooperation between infantry and armor organizations in attack or defense, and particularly in exploitation. It will make possible a reduction of the size of the reserve required on each level, since the highly mobile units could be shifted on the battlefield to meet enemy threats or to exploit success. The economy of force thus accomplished will, again, help to adjust our numerical inferiority in relation to the enemy. The new infantry transport should increase the combat efficiency of the individual soldier by bringing



him into battle in relatively fresh condition.

For many years (probably since the earliest battle) the infantry has granted that its troops were overloaded. Their movement is restricted and their rate of march slowed by the mass of individual gear they are required to pack into battle. They go into action worn out from lugging all this equipment in the approach marches. All attempts to eliminate items of equipment from the required lists seem to meet with understandable opposition, since all of the equipment is at some time useful and the soldier must be prepared to meet the situation as he finds it. Let us mount him and drive him into battle to the point where his individual weapons are needed and are effective.

If our Army were a blend of armor units with tanks of dependable trafficability; tracked infantry, capable of moving freely anywhere; and self-propelled artillery all linked by helicopters for observation, control and communication, with all supplied by air to reduce the possible atomic targets, we would have the ultimate military instrument. In the hands of a commander who possessed vision and the moral courage to use it audaciously, such a force would be practically invincible. It probably could not be successfully defended against by any present-day conventional Army. The enemy would be forced to organize similarly. The war fought in 1941-1945 would be like checkers compared to chess in relation to the mobile warfare which is now not only possible but necessary.

Since it is now demonstrably possible, some army will combine all these possibilities, and unless all other armies follow suit such a force would be difficult to defeat. Even in Korea, we have already reached the point where the simple cutting of supply lines is not enough to assure a tactical victory. The lesson in this is quickly apparent. The fact is, we are no longer completely dependent on ground communications from the rear. Military forces can exist independently of intermediate bases between the source of supply and the combat elements.

Translated into tactics what does this mean? Mobility! We need only slight improvement in cross country vehicles to make it complete and

absolute throughout our units.

The postwar practice of assigning tanks to infantry organizations is quite different from the unification of branches here proposed. The present organization reduces the effectiveness of tanks since it gears the speed of the tank to the pace of the infantry, limits its capacity for maneuver, discounts the protection afforded by the tank's armor and weakens its shock effect. Its mobility, its armor, and its fire power may not be fully exploited when committed in support of infantry. The present organization and the present tactics do not emphasize inherent qualities of the weapon. If the infantry can no longer operate most effectively without tanks, they must join the tanks by adopting some sort of tracked vehicle.

### Ability to Move

It will be argued that there will always be terrain on which only the dismounted soldier can fight, and this is true without question. Even though geography convinces us that the majority of the earth's surface is flat or gently rolling, there will be actions where the individual soldier is the only fighting element which can be put into position, let alone fight after he gets there. It should be obvious, however, that these instances will be, as they have always been, the isolated theaters, the containing actions. In determining the main issue, mobility will be essential. Wars are not won by holding forces but by "dislocation-produced maneuver" (Hart). The commander's freedom of action is usually in proportion to his ability to maneuver—to move.

The speed of execution of the commander's scheme of battle should surprise the enemy and make it more difficult for him to interfere. Therefore, decisions—really great decisions—are not won in mountainous or purely "infantry" country. We have fought mountain campaigns but they have been subsidiary to the whole picture in which the decisive results were produced in "mobile" country. If we are equipped to fight in the open land spaces and trained for a war of movement we can easily adapt ourselves to the restrictions imposed by difficult terrain. If, however, we are equipped and trained for the slow, tedious, restricted type of battle, we will have great difficulty in adjusting

to the fluid speed of open land spaces and the calculated audacity required in a war of movement.

Some will undoubtedly say that the huge cost of this equipment will make it impractical. Without attempting to avoid the argument, we can only point out that, since in any war in which the United States and its Allies are likely to be engaged we are likely to be outnumbered, we must depend on more and better equipment, better training and more enlightened leadership to offset this disadvantage. The industrial capacity of this country is one of its strongest assets. The mechanical know-how of the average American is one of our most publicized qualities. These factors must be thrown into balance. Besides, be it remembered, "an obsolete army is one of the most expensive organizations a nation can maintain, since it can neither secure the nation against war nor end it quickly when war comes." History gives us examples of this fact.

Unless we achieve this essential mobility throughout the ground forces, another stalemate similar to that brought on by the machine gun may occur. If we do succeed in obtaining complete mobility on the ground, we shall have ushered in the era of roadless tactics and a great many reference books and manuals may have to be revised.

Let us not be dismayed by the fact that it has never before been done. Rather let us give it careful consideration BECAUSE of its novelty. For it can easily be proven that new tactical ideas, not new weapons, have produced the significant changes in war. The ground forces can now be unleashed; can now operate independently of their bases of supply; can now effect close and continuous cooperation between branches even in movement; can be dispersed or concentrated at the will of the commander; and should no longer be tied to a rigid net of roads.

Armor is the logical base for the reorganization which must take place within the ground forces. Much of the inspiration can come from the Armor branch. When we look at the picture and ask ourselves—and the Army—which it should be, obsolescence or renaissance, we're seeking an answer that has import for our country as well as our arm and the service.



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## A PICTORIAL RECORD OF THE WAR BETWEEN THE STATES

**DIVIDED WE FOUGHT.** By Hirst Milhollen, Milton Kaplan and Hulen Stuart. Editor: David Donald. New York. The Macmillan Company. 452 pp. \$10.00.

Reviewed by  
**DR. GEORGE TANHAM**

This is at once a courageous but hazardous undertaking to present in one volume the story of the American Civil War in pictures and contemporary drawings. It was not intended for the professional historian nor the serious student of military affairs, although both will find it interesting, but for the average citizen who may be interested in one of his country's most difficult periods. There can be little dispute over the advantages of this pictorial method of education and historical presentation. A picture often serves as a thousand words. But at the same time there are serious drawbacks.

It is difficult, if not impossible, to pictorially present issues, personality and character, and strategy. Without a clear notion of these factors a history of the Civil War is less meaningful and perhaps even inaccurate. A narrative does to some extent mitigate these disadvantages but never completely overcomes them. This volume, due to the great care and knowledge of the editors, illustrates the many advantages and is not greatly plagued by the inadequacies of the pictorial method.

The production of a one-volume account of an event of such scope

### The Authors

Hirst D. Milhollen has been associated with the Library of Congress for 26 years. He is author of "Old Virginia Courthouses" and co-author of "Presidents on Parade."

Milton Kaplan has been with the Library of Congress for ten years. He compiled the catalogue "Pictorial Americana" and is co-author of the book "Presidents on Parade."

Hulen Stuart assisted Mr. Milhollen and Mr. Kaplan in the selection and compilation of the pictures and in assembling caption material for "Divided We Fought."

David Donald, who edited the text of "Divided We Fought," has been a teaching fellow at the University of North Carolina and assistant professor of history at Columbia University.

### The Reviewer

Dr. George Tanham is a graduate of Princeton University. He served as an artillery officer with the 7th Armored Division in World War II. Holding M.A. and Ph.D. degrees from Stanford University, he is now in England on a one-year fellowship at Oxford University, on leave from his regular post of assistant professor of history at California Institute of Technology, where he teaches European history and a course on the history of modern war.

*Illustrations from DIVIDED WE FOUGHT*

and duration as the American Civil War presents two serious problems. With photographs covering only certain portions of the war, and, because of the technical limitations of the period, none of action, the editors were faced with the difficulty of presenting a full and complete coverage of the war. The solution arrived at—omission or very limited coverage of those parts of the war of which few pictures were available and the use of drawings by contemporaries for the action pictures—although at times giving an unbalanced impression, seems satisfactory. A second problem was to present an accurate and well proportioned account of the war which would at the same time explain and correspond with the pictures. Here the device of quoting from participants and contemporary observers is mainly used. Since the written portion is very limited and these quotations are often wordy and not exactly to the point, it might have been better to write a concise narration to fit the selected pictures. It is a worth-while plan to have the war explained by this method, but if the intended reader is not familiar with the basic historical facts it may tend to confuse rather than enlighten him.

It seems strange that in a pictorial history the editors have not included one visual aid to geography, namely a map. In this popular account a few clear maps, not necessarily geographically detailed or militarily precise, would have made the strategy and maneuvering of the armies more understandable to the layman unfamiliar with the geography of Virginia and the other battle areas. The dissection of the Confederacy, includ-





COMMAND. Grant (leaning over bench) in council of war at Bethesda Church, '64.



BATTLE. Forbes' sketch of Custer's capture of South's guns at Culpeper CH.



DEATH. The stone wall below Marye's Heights, Fredericksburg, on May 3, 1863.

ing Sherman's famous march to the sea, would be much clearer, as would McClellan's and later Grant's advances towards Richmond. The raids of Stonewall Jackson up the Shenandoah Valley and Lee's thrusts into the north could be revealed so vividly by a map.

The Civil War was well photographed, due to the efforts of Matthew Brady and his assistants, but certainly not as well as World War II, as the publisher claims on the jacket. Even with the thousands of photographs available there were gaps in the coverage of the war. The editors made trips to the south to obtain pictures of the Confederate Armies, which were not so well attended by photographers as the Northern, and whose records in defeat were not so well kept. In spite of every effort and the collection of thousands of photographs, the western campaigns could not be well covered, the pictorial role of the navy was only partially available, and photographs of certain leaders were not obtained. From the great collection the editors selected nearly five hundred for inclusion in this volume. David Donald, assistant professor of history at Columbia University, is general editor and author of the text.

The book in general satisfies the reader that all possible aspects of the war are covered. However, the viewer is given too many opportunities to try his skill at the game of judging the character and intelligence of leaders by their photographs, and there are many obscure Civil War generals pictured. There are approximately one hundred and twenty-five single portraits, almost all of generals, many of whom played minor roles or distinguished themselves only briefly. It seems a little out of proportion to devote nearly one-fourth of the pictures to such individuals, thus tying the narrative to them. Although portraits probably dominated the collections, many could perhaps have been omitted in favor of other aspects of the war. The public will certainly want to see the leading generals of both sides, and a few of the lesser ones, but not every general who slightly distinguished himself, and some who hardly did that.

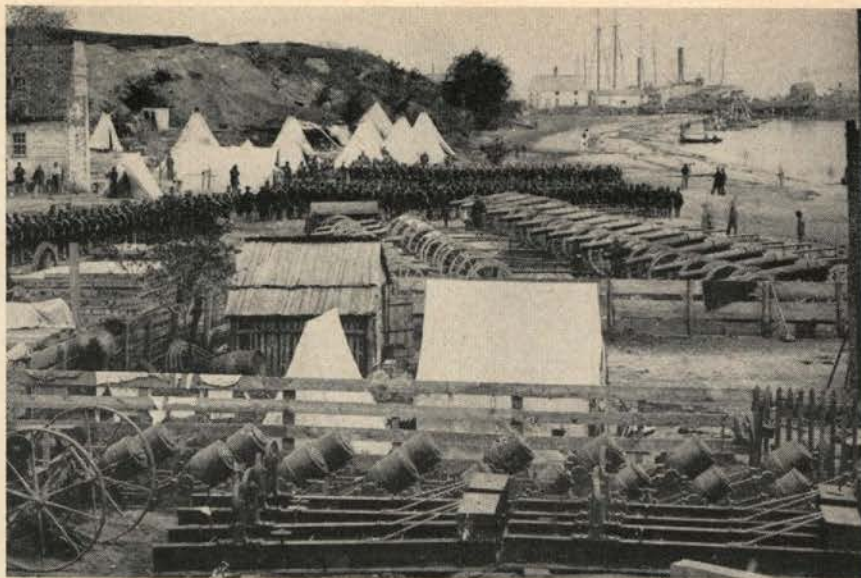
The life of the soldier of both sides is shown in its many aspects. He is pictured in full dress uniform, on



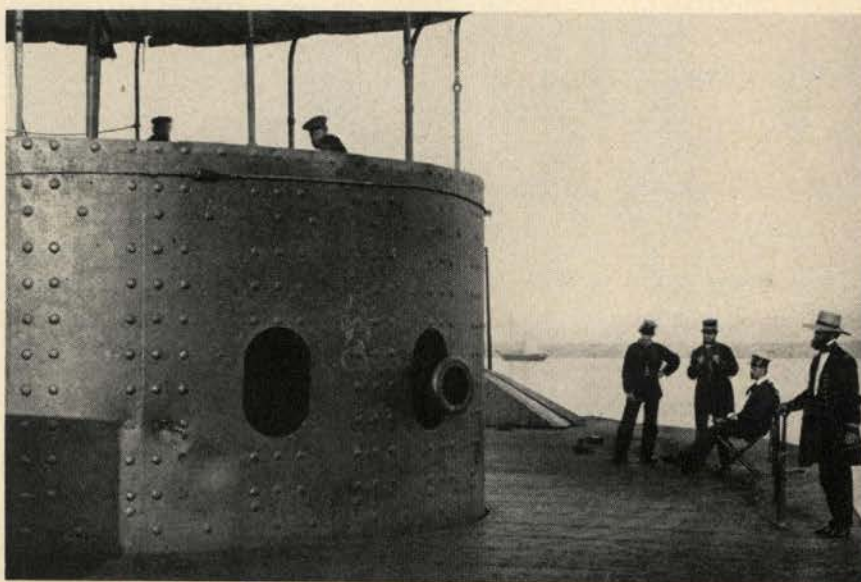
parade, in battle, in fortifications, at rest, and in training. His everyday thoughts as well as his feelings in battle, defeat and victory, are revealed by the quotations from men on both sides. The average soldier of the Civil War in many respects was like his twentieth-century counterpart. He liked to name his miserable huts or holes in the ground, just as the "GI's" did in World War II. With no language barriers there were occasional opportunities in quiet sectors for short conversations and some bartering between the soldiers of the Blue and the Gray. At times informal agreements were made as to when the sharpshooters would shoot and when they would not, similar to arrangements between the French and the German troops in World War I on duty near the Swiss border. The dullness and inactivity of war is shown, and the soldier, then as now, solved this boredom with a little whiskey, some poker, "bull sessions," and a great deal of healthy grumbling.

There is a good chapter on the naval aspects of the war. An excellent picture on page 259 shows with simplicity and stark reality the end of most of the blockade runners. The crew of the *Monitor* are shown in their untidy daily garb, and six United States Marines are shown in all the splendor of that corps. Amphibious operations are described, but unfortunately there are pictures only of the forts and cities which opposed these landings. Inter-service rivalry then as now appeared and, with the exception of General Sherman, the navy was dissatisfied with the army generals and felt, justifiably the editor feels, that the army took too much of the credit and glory for the landing operations. In the narrative the crucial role of the navy is explained and its successful accomplishment of its assignment is fully stated.

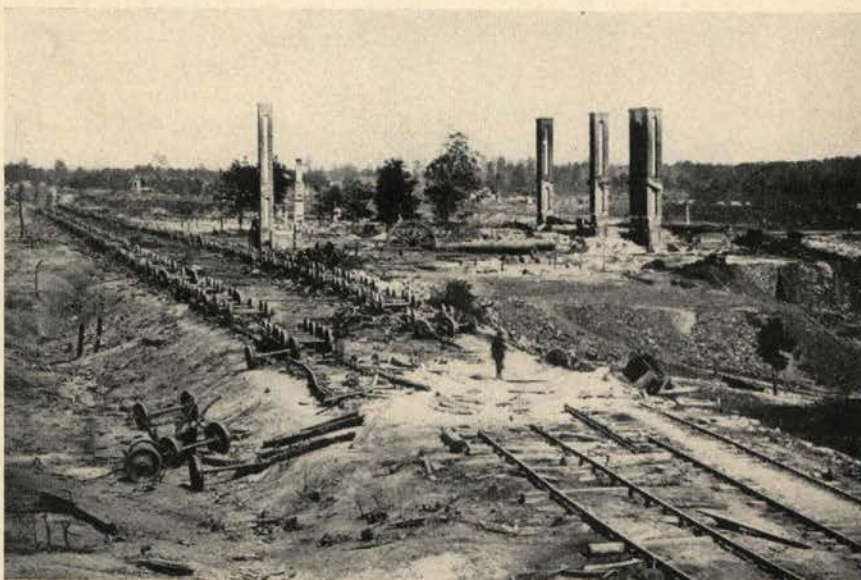
The drawings and sketches are particularly good and very useful in the understanding of the battles. There is a good one of the Union position at Spotsylvania, another of the battle of Chickamauga, and a wonderful panorama of Gettysburg. The drawing of the wounded soldiers escaping from the burning forest at the Battle of the Wilderness shows the terror on the faces, and the hopeless position of some of the more



LOGISTICS. Union ordnance ready for transfer from the port of Yorktown.

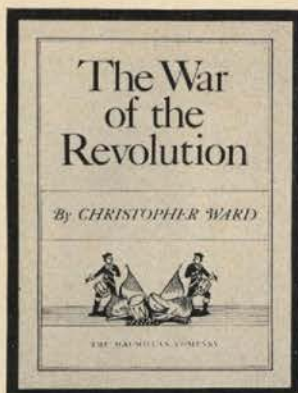


NAVY. Effect of fire from C.S.S. Virginia on the turret of the U.S.S. Monitor.



DESTRUCTION. Ruins of rolling mill and train on Georgia Central Railroad.





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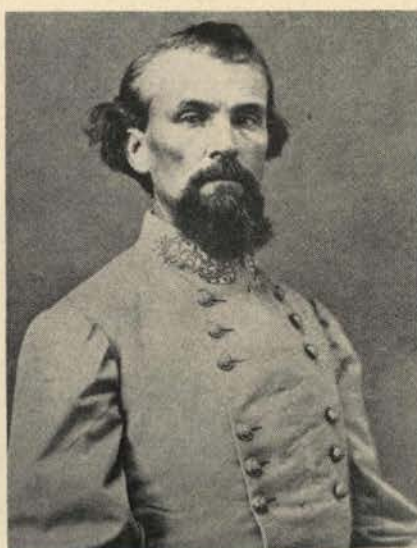
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severely wounded. The charge of Brigadier General Francis Barlow's men at Cold Harbor reveals the confusion of battle, and shows how much dispersion modern weapons have effected in battle action. The great area covered by a Civil War army and its means of supply is clearly shown by the sketch of Sheridan's supply wagons which, with their white tent covers, extend as far as the eye can see.

The book includes some of the minor but fascinating episodes of the war. Dr. Lowe's balloon in which he ascended to observe for the northern forces is a picturesque forerunner of the present-day army's light avia-

tion. Further wars and for realism, there are pictures of dead and wounded, of leveled villages, and of the whole pattern of military destruction.

In a more constructive sense the excellent engineering work of General Haupt, often forgotten, in repairing and maintaining the vital railroads of the north, is shown and described. There are personal interest stories such as the one not always related about Grant, that he was not anxious to bring up his artillery to slaughter the fleeing mass of Confederates at Appomattox. The overall strategy and some tactics are interspersed with the general narrative while the significance of such battles



LEADER. Gen. Bedford Forrest.



LEADER. Gen. J. E. B. Stuart.

tion. The lovely actress Pauline Cushman, who served so successfully as a Yankee spy, is shown in the only portrait of a woman in the book. "Silver Spoon" Butler, sent by Grant to threaten Lee by landing on the James River below Richmond, was "hermetically sealed" at Bermuda Hundred, and his subsequent grandiose defense schemes are described in a comic vein.

The coverage in this volume is so broad that some aspect should interest every reader. Besides the pictures of soldiers performing their duties, there are sketches and photographs of places where battles took place and one knows just what Bull Run looked like at the time of the war. For those who feel that the horrors of war should be used to discourage

as Antietam is explained in a military and diplomatic sense. The home fronts are not forgotten and the role of public opinion is pointed out. Both North and South should be pleased with the objective accounts of battles as well as the appraisals of men.

*Divided We Fought* serves well its purpose, to give the American people an interesting and accurate pictorial account of the Civil War. The narration is sound and, in spite of some lack of proportion, due to the necessity of staying with the pictures, presents an accurate account of the war. The technique of quotations adds flavor at some expense to explanation. The book requires time and leisure. A second perusal will not prove disappointing.



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