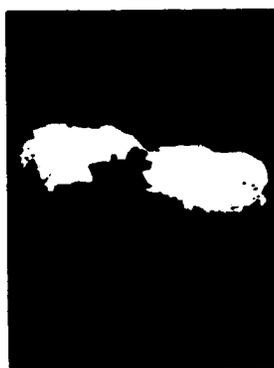


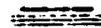
*a prize winner . . .*

MAGAZINE SHOW

1951



**ARMOR**



MAGAZINE SHOW

1952

*"What is past is prologue . . ."*

**ARMOR**

*The Magazine of Mobile Warfare*

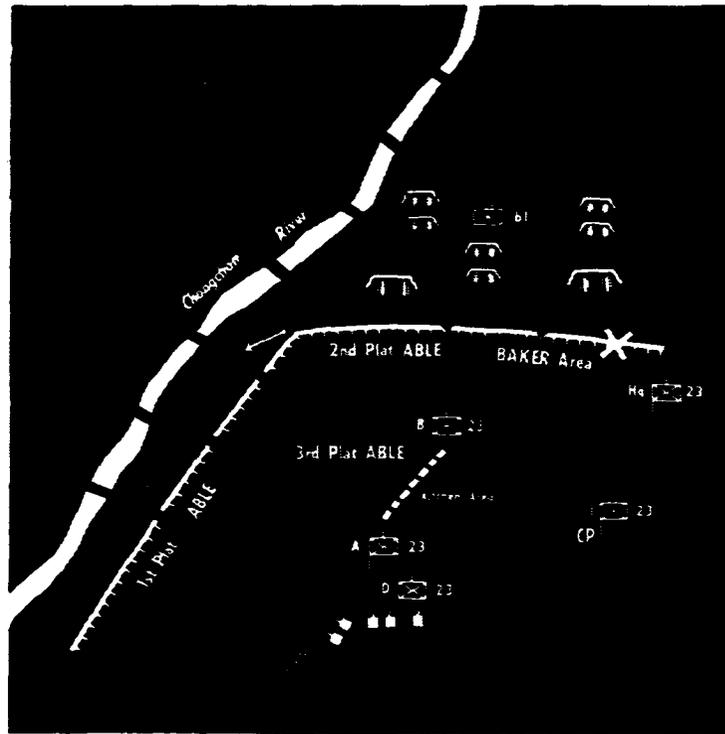
**A**

A FEATURE FOLLOWS  
**The Armor**

GROUND FOR

MARCH - A

A grim, dramatic and factual report on the entry of the Chinese Communists into the Korean War. . . .



The Chinese crossed the Chongchon in seven parallel columns to attack the entrenchment camp. (One of the many maps in the book)

## THE RIVER AND THE GAUNTLET

### DEFEAT OF THE EIGHTH ARMY BY THE CHINESE COMMUNIST FORCES, NOVEMBER, 1950, IN THE BATTLE OF THE CHONGCHON RIVER, KOREA

By the distinguished military historian, **S. L. A. MARSHALL**

Author of *MEN AGAINST FIRE*, *ARMIES ON WHEELS*, *ISLAND VICTORY*, etc.

For the professional reader, this first full report on the entry of the Chinese Communists into the Korean War casts a white light on tactics and operations. Historian Marshall, through exhaustive interviews of participants in the battle, builds up a composite picture of the action as it actually happened. He separates truth from theory, makes sense out of confusion, and neither generalizes nor censures. At the time of the Chinese attack, Marshall was Infantry Operations Analyst with the Eighth Army in Korea. During World War II he served as Chief Historian for the ETO; he is now consultant for the Operations Research Office at Johns Hopkins University, as well as editorial staff member of the *Detroit News*. With 34 maps and 7 illustrations of weapons. \$5.00

Watch for the exclusive feature review by Marguerite Higgins in the May-June issue of *ARMOR*.

ORDER THROUGH THE BOOK DEPARTMENT



## The United States Armor Association

Continuation of  
The United States  
Cavalry Association  
(Established 1885)

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. GROFFREY KEYES

LT. GEN. EDWARD H. BLOOKS

MAJ. GEN. ERNEST N. HARMON, Ret.

Vice-Presidents

MAJ. GEN. HOBART R. GAY

MAJ. GEN. DONALD W. MCGOWAN

COL. HERBERT H. FROST, USAR

Secretary-Treasurer

MAJ. WILLIAM GARDNER BELL

and

LT. GEN. WILLISTON B. PALMER

MAJ. GEN. BRUCE C. CLARKE

MAJ. GEN. JOHN H. COLLIER

MAJ. GEN. ALBERT S. JOHNSON, NG

BRIG. GEN. PAUL D. HARKINS

BRIG. GEN. PAUL M. ROBINETT, Ret.

BRIG. GEN. HARRY SEMMES, USAR

BRIG. GEN. JOHN P. WILLEY

COL. CREIGHTON W. ABRAMS

COL. CHARLES E. DESSINGER

COL. WELBORN G. DOLVIN

COL. H. H. D. HEIBERG

COL. HARRY W. JOHNSON

COL. HENRY CABOT LODGE, JR., USAR

COL. JAMES H. POLK

# ARMOR

The Magazine of Mobile Warfare

Continuation of THE CAVALRY JOURNAL

EDITOR

Major William Gardner Bell

ASSOCIATE EDITOR

Major William H. Ziesck, Jr.

CIRCULATION MANAGER

M Sgt Lester B. Smith

BUSINESS SECRETARY

M Sgt J. William Joseph

SHIPPING DEPARTMENT

M Sgt George W. Yankovich

BOOK DEPARTMENT

Sfc Michael E. Kekker

Volume LXII

MARCH-APRIL, 1953

No. 2

### CONTENTS

LETTERS TO THE EDITOR .....	2
RECONNOITERING .....	4
GROUND FORCE MOBILITY .....	6
By Brigadier General Paul M. Robinson	
THE 64th ANNUAL MEETING OF THE UNITED STATES ARMOR ASSOCIATION 12	
THE RED ARMY AND ATOMIC WARFARE .....	24
By Colonel Louis B. Ely	
EDITORIALS .....	28
MOBILE DEFENSE OF WESTERN EUROPE .....	30
By Major General George W. Bond, Jr.	
FOR THE ARMORED DIVISION: NEW BATTLEFIELD POTENTIAL .....	31
By Brigadier General Robert Loth	
SUM & SUBSTANCE .....	32
By Lt. Col. George T. Pitts, Jr., 1st Lt. James C. Spinks, Capt. Allen B. Hunt, Capt. Orlando E. Vitella, Capt. K. Stuart Kinn, and Capt. Wilbur S. Plarad	
FROM THESE PAGES .....	39
THE CORE OF THE MATTER: A PICTORIAL FEATURE .....	40
WARFARE AND THE FUTURE .....	42
By Major General J. F. C. Fuller	
WARMAKING POWERS OF THE UNITED NATIONS .....	48
By Captain Edward J. Roxbury, Jr.	
TANK GUNNERY IN KOREA .....	50
By First Lieutenant Seth Ward, Jr.	
FORDABILITY .....	52
By Captain Richard D. Tree	
NEWS NOTES .....	54
ARMORED INFANTRY BATTALION ORGANIZATION .....	61
By First Lieutenant Charles P. Nixon	
WHAT WOULD YOU DO? .....	62
ANTITANK DEFENSE .....	65
By Hermann Burkhardt Meisler-Hillebrand	
THE SKYSWEEPER .....	66
A NEW RANGE FINDER TRAINER .....	70
THE BOOK SECTION .....	71
HITLER: A STUDY IN TYRANNY .....	71
A review by Michael A. Mazzamano	

ARMOR magazine is published under the auspices of the United States Armor Association, and is not an official publication. Contributions appearing herein do not necessarily reflect official thought or endorsement. Articles appearing in this publication represent the personal views of the author and are published to stimulate interest in, provoke thought on, and provide an open forum for discussion of military affairs.

Publication and Editorial offices: 1727 K Street, N.W., Washington, 6, D. C. Copyright, 1953, by The United States Armor Association. Entered as second class matter at Washington, D. C., additional entry at Richmond, Virginia, under the Act of March 3, 1879, for mailing at special rate of postage in Section 34.40, Act of October 30, 1951. Terms: Domestic subscriptions, including APO's, \$4.75 per year. Foreign, including Canada & Pan America, \$5.50 per year. All subscriptions payable in advance. Single copies, 85¢.

# STONEWALL JACKSON

## and the American Civil War

by

Col. G. F. R. Henderson

This book, used by the British War College and West Point, after fourteen printings necessitated a recasting. In analyzing all of Jackson's campaigns and engagements Colonel Henderson was able to keep the dispassionate attitude of the highly trained tactician, with the result of bringing Stonewall Jackson vividly alive as a man and military genius, re-creating his important part in the war between the North and the South. One of the few classic biographies of the modern world.

First Published in 1898

Price \$6.00

## LETTERS to the EDITOR

### Direct vs. Indirect

Dear Sir:

I have just read with much interest your issue for Jan-Feb '53. From many fine articles, the one entitled "For the Potential Corps Armored Officer" has especial interest for me.

Although the author of this article has remained anonymous, no one who was with IX Corps Headquarters in 1950-51 could doubt his identity.

In particular, I noted LtCol Pic—excuse me, the author's paragraph under "Operational Control" regarding the use of tanks in "indirect fire."

Let us consider his objections in the order given:

1. The "wearing out of gun tubes."

Of course, any tubes—tank, FA, or AAA, will wear out quickly if subjected to sustained rates of fire in excess of the rates set forth in the various TM's. Rate of fire is a command matter, influenced largely by the existing situation.

The 90mm guns of the Antiaircraft Artillery have as their primary target hostile aircraft. However, the secondary role of reinforcing Field Artillery fires is an important and specific part of AAA doctrine. Apparently, this secondary role has not imposed an impossible burden of tube wear on the AAA.

Further, normal tube life of the 90mm guns (AAA or tank) is not significantly shorter than that of the 155mm gun of the Field Artillery. The job of replacing a 90mm tube weighing about 2300 pounds is scarcely more difficult than that of replacing a 155mm gun tube weighing about 9600 pounds.

2. The "relative inaccuracy of the fire."

No one that I know or ever heard of wants to use tank fire for FA type, indirect precision (destruction) missions. I contend that tank fire based on corrections from observed registration is sufficiently accurate for adjusted fires or harassing fires on area targets.

3. The "difficulty in observing & controlling" tank fire.

Granted that the burst of a 90mm HE round is harder to pick up than a 105mm Howitzer, it's not that much harder—and can be done. Observed adjustments should be made by an Artillery Air OP, with guns using WP for initial rounds. As for Service of the Piece, that is a matter of fairly simple training for tank platoon leaders and crews. Fire direction may be handled by an adjacent Artillery battalion.

4. The "effect of reducing the tank-er's desire to overrun his enemy."

Gunners—whether they be tank or Artillery gunners—habitually like to fire. When performance of the tankers' primary mission is not imminent but the enemy is still within range of his guns, one would imagine that the tanker would be glad to get in a few extra licks.

This was, in fact, the case upon the occasion when the tank company described by the author engaged in indirect fire. The tankers were enjoying the project and were glad to learn another means of using their weapons. We were just getting the thing well set up when the author, in great anguish, caused us to desist. The indirect firing done by these tankers may have had a vitiating effect upon their fierce desire to crush the enemy by mobility and shock action. However, I doubt it.

5. The "increase in the idea of using only the gun power of the tanks."

In view of the manpower advantages of our enemies, present and potential, the need for overwhelming superiority in fire power has greater meaning than ever before. Cannons are fire power, and 90mm guns are cannons—no matter how you mount them.

Tanks certainly must not be diverted from their principal role to act as reinforcing artillery. In a favorable situation for tank employment or in face of an enemy armored attack, it is very

difficult to imagine a commander who would say, "Well, my tanks must be used as reinforcing artillery. I cannot spare them for their primary mission." But, when tank fire power can be properly and advantageously used in the Artillery role, it ought to be so used.

What should be the policies for use of tanks as Artillery? I suggest:

1. Execution of the basic tank mission must not be an immediate probability.

2. Tank units used as Artillery must be able to resume their normal role quickly and efficiently.

a. Firing positions must not be prohibitively distant from the regular blocking or reserve positions of the tank units.

b. Fires should be reinforcing. That is, observation, survey, and fire direction must be provided by the reinforced field artillery battalion. The tank unit should need only to accept and fire the missions.

c. The reinforcing role should be specifically initiated and terminated by the corps, division, or regimental commander as appropriate.

3. Rate of fire should be from 5 to 10 rounds per tube per day for short periods of 4 or 5 days at a time. A tank company thus could handle 6 or 7 missions per day during the period.

4. Training of tank units should include service of the piece in indirect fire; with, for officers and key NCO's, basic instruction in use of the aiming circle.

The author of cited article and I have had many arguments on this subject. He may still be unconvinced; but we will, I trust, remain friends!

WILLIAM W. COVER  
Major Artillery

Ames, Iowa

### A Spade a Spade

Dear Sir:

The cover of the latest issue of ARMOR Magazine bearing the insignia of five Allied Armored Divisions is beautifully done, albeit incomplete. Why did you not include the Belgian

16th Armored Division which is located in the British Zone? Thus there are six instead of five Armored Divisions on the European Continent. I'm sure Major General Gysels would be deeply hurt if he felt his division, although incomplete, was not considered a part of our mobile forces in Europe.

CAPT. LLOYD E. LORENTZEN  
Co C, 29th Tank Bn (Hvy)

AP0 42

ARMOR's cover and tie-in editorial were aimed at illustrating how few as well as how many armored divisions are available to the North Atlantic Community for mobile defense of Western Europe. Omission of the Belgian 16th Armored Division was based on an understanding that it was still in organizational stages. ARMOR has expressed on many occasions its concern over such dangerous habits as that of calling the three U.S. light armored regiments in Europe "roughly equivalent to an armored division." No disparagement to the unit is intended; the reason is nothing more than a desire for a careful weighing of substance in keeping with the meaning of a military designation. ARMOR salutes the 16th Belgian Armored Division in the full realization of its contribution to the mobility of Western Defense, along with the five other Allied armored divisions and many armored groups, brigades, battalions and companies. (See page 30.)—Ed.

### Armor's Future

Dear Sir:

I am very interested in Armor and would like to subscribe to your magazine and have a list of any other publications or magazines on the subject. When I leave college I plan to go into the 49th Armored Division. Many of my friends are thinking along these lines. The big trouble is that the Army doesn't let us study Armor, or a branch in High School ROTC and we don't see much material on Armor, and we lose interest.

CADET PFC JIMMY HAYS  
North Dallas High School  
Dallas, Tex.

Edited by  
Beatrice Ayer Patton

# WAR AS I KNEW IT

by

Gen. George S. Patton, Jr.

From his childhood, George Patton had one absorbing interest—the military art. His life culminated in history's greatest opportunity for the practice of this art. Outstanding exponent of mobile warfare, his memoirs have the interest which always is found when an intensely human expert writes of the field to which he has given the unswerving devotion of his life.

First Published in 1947

Price \$4.50

ARMOR is published bimonthly by the United States Armor Association.

Copyright: ARMOR is copyrighted 1953 by the United States Armor Association

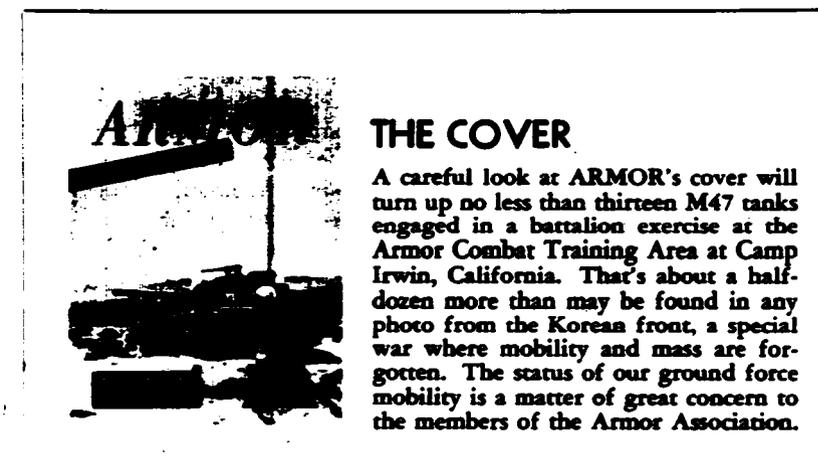
Reprint Rights: Authorized so long as proper credit is given and letter of notification is forwarded to Editorial Office. Two copies of the reprinting would be appreciated.

Advertising: ARMOR is the professional magazine of the United States Armor Association; a nonprofit, noncommercial educational publication. We DO NOT accept paid advertising. Such advertising as does appear in ARMOR is carefully selected by the Editor and concerns only those items which may be considered an adjunct to a professional career.

Manuscripts: All content of ARMOR is contributed without pay by those interested in furthering the professional qualification of members of the Armed Services. All manuscripts should be addressed to the Editorial Office, 1727 K Street, N.W., Washington 6, D. C.

Change of Address: All changes of address should be sent to the Editorial Office in time to arrive at least two weeks in advance of publication date of each issue, which is the 25th day of the odd month of the year: i.e., Jan. 25 for the Jan-Feb issue, Mar. 25 for the Mar-Apr issue, etc.

Rates: See bottom of contents page.



ARMOR—March-April, 1953

The sun is warm for the ides of March; warm as it angles through the 180 degree window bay fronting K Street; warm as it bathes the editor's chair positioned in the bright alcove.

An interesting chair, that! It's the chair that, figuratively speaking, has seen a quarter-hundred previous editors in a full sixty-five years since its establishment. It's the chair that's about to relinquish Editor Number 26; the chair about to receive Editor Number 27.

The occupant of this editorial chair will not escape a sense of history. At elbow stands a master file of bound volumes embracing three score and five years of publication. Around the walls are representative covers depicting changes in format through the years. A 1920 recruiting poster lists the mobile soldier's mount as "a courageous friend" and "man's noblest companion." Each World War II armored division is represented in a carefully selected and framed photo enlargement series. Portraits of fourteen Association presidents flank one wall of the library. The two Georges, Custer and Patton, are spotted in prominent position, and much in evidence are top figures in mounted, mobile, armored warfare, ranging from Murar to Jeb Stuart to Heinz Guderian.

Thus the headquarters of the Magazine of Mobile Warfare.

That master file! The careful researcher has here a wealth of historical background. For example, a look back over our editorial predecessors brings to light a list of some seven who went on to become general officers. One of these, Captain (later Major General) William H. Carter, was the only editor who later became president of the Association.

The name of another editor, who held the chair a half-century ago, will be familiar to many military personnel today who have had occasion to read his classic book, *American Campaigns*: Matthew Forney Steele retired as a lieutenant colonel, now lives in North Dakota.

Research reveals that periods of editorial incumbency have varied from two months up to eleven years, the latter record being held by Lieutenant Colonel Ezra B. Fuller, who filled the post

initially on an active duty part-time basis, and later carried along under retired status. In the earlier years of publication of the magazine of the mounted arm, the editorial stint was an extra duty detail. The material published in those years was substantially that presented in paper and discussion form before Association meetings. Layout was simple, illustration practically nil, and the entire operation might be said to have been more secretarial than editorial.

As time moved along and Branch Chiefs were instituted for the ground arms, and the editorial task took on proportion, the editorial assignment was moved into the Chief's office with an expanding attention which resulted finally in full-time assignment, the Army recognizing the appreciable contribution to the profession of arms resulting from assignment of qualified active professionals at this key source. Today the job has taken on the proportions of a staff operation, although it has been handled by a single editor for the past three years. The qualifications are not unlike those required in a similar capacity in the commercial magazine field.

Assignmentwise, five years may seem like a lengthy tour of duty, but editorialwise you may be sure it is not.

Although it is assumed that an army officer can do anything and everything merely by virtue of assignment, here is a type of work that is apart from the straight military qualification that is the foundation and framework for most duty.

It takes a good period of time to get properly wound up on the job. Just about the time an editor becomes familiar with the beat, has carefully developed his contacts, and has the ulcers well modulated—whoosh, the axe falls! He moves on, and his successor moves in to start the process once again. Herein lies a certain disadvantage in the active duty staff pattern. It is more than offset, however, by the professional qualification in branch specialty and validated technical knowledge which rotating editors are able to bring to the chair; this tends to keep the circuit open to the field and the working level, obviating an otherwise inevitable tendency toward preoccupation with high level strategy that is the result of being

walled off in an editorial office in the planning atmosphere of the Nation's capital for too long a spell.

The Army's farsighted action in recognizing, lo these many years, the value of the active staff, particularly with respect to the combat arms, has been in some degree sabotaged by the creeping effects of commercialism—so much so, in fact, that by the time this is read, it may well be that this magazine alone among the combat arms periodicals will be operating with an active staff on a wholly professional and non-commercial basis, in that critical area between the strictly official and wholly commercial fields. This is most unfortunate, especially for the junior officer and noncommissioned officer, whose outlets for expression, discussion, thought and learning, already limited, are being trimmed even further, rather than expanded. Thus commercialism and a seeming anti-intellectualism, under the guise of economy and unification, gnaw away at our professional media. Thus several of our individual arms, earnestly in need of attention, have lost a voice and championship.

A review of the history of the magazine of mobility is at the same time a review of the evolution of mobile warfare over a matching period of years. More than any other arm or service, the mounted force has undergone a marked evolution. The change is reflected in the professional periodical and professional organization which represent the special field. Within the framework of the major role, the transition has been paced editorially and organizationally in successive name changes, leading from Cavalry to Armored Cavalry to Armor. The continuity has hinged in the role.

Editors in the line of succession have kept the tempo of the advance, with circumstances dictating the rate of movement. Some periods may have been geared to a moderate pace. As Editor 26 looks along the back trail there is the unmistakable reflection of a sustained gallop. For this was the period of transformation from horse to horsepower.

Supreme Commander General Douglas MacArthur, writing from Tokyo on the 60th anniversary of the Magazine of Mobile Warfare, set the theme: "During these decades no other branch has experienced greater change in weapons, in tech-

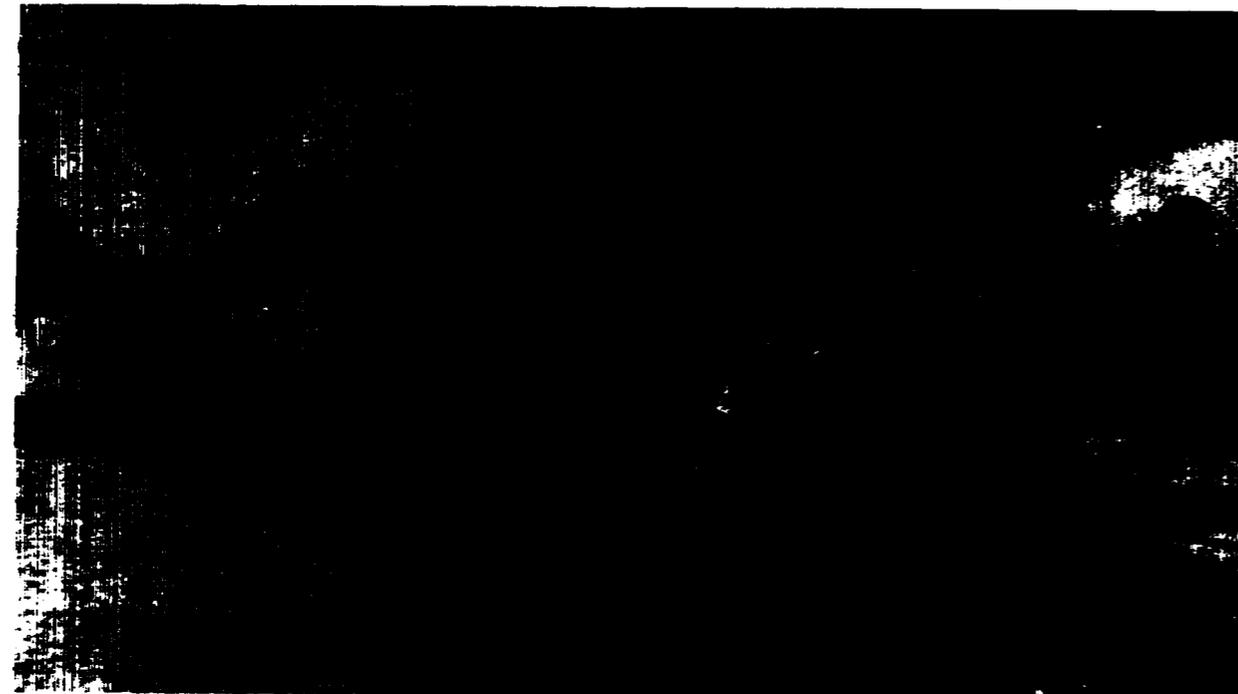
nique, and in tactical requirement. Discarding the horse and saber to keep pace with the increasing tempo and violence of modern war, the cavalryman speedily adjusted himself to armored mechanization and commensurate fire power, firmly to hold his historic role of the far-flung and rapid movement echelon. In this he demonstrated with striking clarity that the invincible *esprit* which has characterized his past yet carries him to the vanguard of every advance, an irresistible force toward victory."

Sixty-five years. A quarter-hundred editors. Number 26 moves into the past. What better epilogue to satisfy a sense of history than a recapitulation from its pages?

1888-1890	1st Lt. Otto L. Hein
1890-1892	Capt. Camillo C. Carr
1892-1897	Capt. William H. Carter
1897-1898	1st Lt. T. H. Slavens
1898-1899	Maj. J. A. Angur
1899	1st Lt. Charles D. Rhodes
1900-1901	Publication suspended
1902-1904	Capt. L. C. Scherer
1904-1905	Capt. Matthew Forney Steele
1905-1907	Capt. Herbert A. White
1907-1918	Lt. Col. Ezra B. Fuller, Jr.
1919	Publication suspended
1920-1921	Maj. Robert C. Richardson, Jr.
1921-1924	Maj. Jerome W. Howe
1924	Capt. George A. Moore
1924-1927	Lt. Col. W. V. Morris
1927-1928	Maj. Karl S. Bradford
1928	Maj. K. G. Eastham
1928-1931	Maj. Oliver L. Haines
1931-1935	Lt. Col. George M. Russell
1935-1937	Capt. Charles S. Miller
1937-1940	Maj. Charles S. Kilburn
1940-1942	Maj. Fenton S. Jacobs
1942-1948	Col. Edwin M. Sumner
1948	Col. Wesley W. Yale
1948-1950	Col. Claude O. Burch
1950-1953	Maj. William Gardner Bell

These were the ones who were . . .

*The Editor*



Press Association

# GROUND FORCE MOBILITY

by BRIGADIER GENERAL PAUL M. ROBINETT

*Modern warfare is mobile warfare. The nation that acts on the lessons of history will field forces predestined for victory*

**I**N a military sense mobility implies more than just mobility in equipment and in organization. It is also a state of mind. If it does not exist in the minds of responsible high level civilian and military leaders, mobility is impossible on the battlefield even though equipment and the organization of forces make it possible. The lack of mobility in mind will result in rigid, shortsighted plans and in sloth-like operations which will tend to degenerate into static situations. On the

BRIGADIER GENERAL PAUL M. ROBINETT, entered service from the experience of a career in the mobile arm. Leader of a Combat Command of 1st Armored Division in the Tunisian Campaign in World War II, he is now Chief of the Foreign Studies Branch, Office of the Chief of Military History, U. S. Army.

other hand, mobile-minded leadership, lacking mobile weapons and organization and adequate logistical preparation for the execution of operations, can only develop unsound projects which will ultimately lead to disaster. So it is that static or defensive warfare is the refuge of mediocre civilian and military leaders and mobile warfare the pitfall of the incautious. These two possibilities are the scarlet threads that run through all of recorded military history.

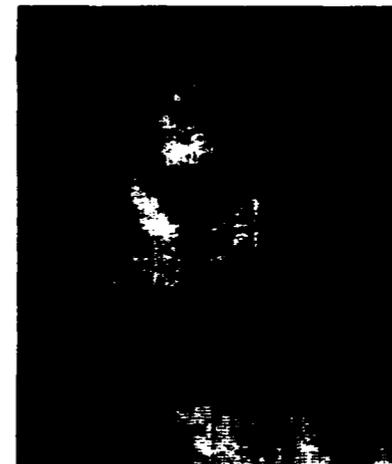
The story of war is the record of an unending contest between the proponents of static and mobile concepts. Napoleon, for example, came upon the scene at a time when the armies of Europe had fallen into a fixed pattern and military operations were conducted in a sluggish, geomet-

ric manner. It was the end of the period of mercenaries. He adopted a revolutionary practice by developing military organization in an army of the masses which was capable of moving with great rapidity, of living off the country, and of striking with great violence at a decisive place and time. Napoleon was a genius of maneuver and, for a time, of logistics. In the end, however, he brought about his own ruin in pursuit of the elusive Russian Army beyond the limits of his mobility and in disregard of logistical considerations.

Another great disciple of mobility was Hitler. Taking advantage of the industrial potential of his country, of the military decadence of his neighbors, and of the disarmed status of Germany, he developed military or-

ganization and equipment of great mobility and offensive striking power. Consequently, by 1939 all opposing ground forces were obsolete and ripe for destruction. But the Fuehrer was an impatient man and launched a series of lightning wars before his machine was fully built. He won some of the greatest victories of all time but to no avail. His obsession for mobility and his lack of comprehension of logistical considerations led him into the limitless depths of the Soviet Union without having taken the precaution of preparing for a winter campaign: led him beyond the capabilities of his mobile forces, and ultimately to his doom. Hitler entered upon this venture with less than 3,500 Mark II, III, and IV tanks while, Guderian estimates, the Soviets had 17,000 tanks in 1937 and had increased the number by the time the campaign opened on 22 June 1941. But the great surprise to the Germans was the appearance of the superior Soviet T-34 tank near the limit of their penetration.

Interesting examples of offensive mobile-minded high commands, lacking the means for mobile operations or the ability to concentrate those available, were those of France and of Germany at the beginning of World War I. The high commands of both nations had decided upon the offensive and each of them attempted to launch a great attack at the outbreak of hostilities. The French forces were quickly thrown back and were fighting for existence in a series of retrograde actions. On the other hand, the German high command, although tactically successful, lacked energy and weakened the enveloping forces by detaching elements to the east and by failing to mass the cavalry on the exposed right flank. It soon lost the ability to continue the offensive and was forced back upon the defensive. It had hoped that by repeated limited objective attacks it could hold the initiative and eventually wear down and destroy the Allies in the west. But it failed completely when the weight of the United States Army tipped the scales against Germany. Genius was lacking on both sides during the prewar planning and organization of forces and in the actual employment of existing mobile forces in the conduct of operations.



Library of Congress  
Napoleon

The possibilities of mobile warfare were not fully tested in World War II because of a lack of imagination in the preparation of plans and in the organization of forces. The chiefs of the various military establishments and their principal staff subordinates were of traditionally conservative mold—some more than others. In Great Britain, France, and the United States the idea of mobile warfare was not welcome. There were some advances in mobility but its advocates, particularly in Great Britain and France, had no official part in the preparation of either plans or forces. Many advocates of mobility, notably Fuller, Liddell Hart, and De Gaulle, were to have more influence in the enemy camp than in their own lands. In Germany, Guderian's ideas of mobility were no better received in the General Staff. On gaining control in 1933, Hitler quickly adopted



Captured German Photo  
Hitler

the idea of mechanized warfare, but his administrative organization was inefficient. Finally, he was lured into precipitate action by the prospects of quick and sure tactical successes but with the Panzer command still in an incomplete state and its destructive operational possibilities imperfectly understood. Although improvements were made and Panzer corps and armies were created, the German armored force was never as fully developed as mobile-minded commanders, such as Guderian, planned, but remained a makeshift substitute to the end. It was so because Hitler made twenty-five Panzer divisions out of ten without increasing his tank strength proportionately. Neither did German invention and production ever match Hitler's requirements, which were far greater than he envisaged. Thus he won only tactical successes and eventually suffered an annihilating defeat. The mobile-minded Fuehrer came to his tragic end still commanding imaginary mobile forces, which in reality existed only on paper.

In the United States mobile-minded men were denied responsible posts in the War Department. They had no part whatsoever in planning the World War II Army or in formulating strategic plans for the employment of the Army. German blitz successes in Poland were rather lightly regarded, but the fall of France, under the crushing blows of Kleist's and Guderian's Panzer forces, made a profound impression. However, the basic reasons for the German victory in the west were not well understood. It resulted from a strategical surprise, from the speed and violence of the attack by massed and coordinated Luftwaffe and Panzer forces on a narrow front at the point of main effort, from the speedy exploitation of the breakthrough, and from the relentless pursuit of the broken Anglo-French armies.

Following the German successes in Western Europe, the Armored Force, with almost autonomous authority, was quickly created by the War Department on 10 July 1940 and General Chaffee, a long-time advocate of mobile warfare, placed at the head. He had the vision so lacking in the War Department, but death intervened and his grand idea was soon blighted by less imaginative minds. The crisis in Europe having amelior-



Martel British Official

rated, the traditionalists in the War Department reverted to form. Effort and means that should have gone into the creation of an offensive mobile force of armored corps and armies were squandered in developing inefficient antitank organizations and equipment. Some of the latter, as for example a 37mm gun mounted in the tail end of a light truck and a 75mm gun mounted in the front end of a halftrack, although probably adopted only as stopgap equipment, were retained too long and proved useless and sometimes even tragic to the little band which fought the meeting engagement with German troops in Africa. Yet it cost many millions of dollars and, most unfortunately, represented the squandering of military personnel, of strategic materials, and of labor on defensive organizations. This violation of the principle of economy of force and of means, together with others, could have been responsible for our defeat: had the balance been more closely drawn than it was.

Finally, when Germany culminated a blitz through the Balkans by seizing Crete with airborne troops, the War Department, not knowing the exorbitant cost of the apparent victory in blood and matériel, created an excessively large airborne force—the most costly and the least mobile form of ground troops. But worse still, these units were allowed to recruit the adventurous, dynamic, mobile-minded personnel from the Army. This tended to reduce the quality of the infantry, armor, and artillery personnel because the Air Forces got first choice.

In the European Theater the lack of mobile mindedness in the War Department was equally apparent in Allied Force Headquarters and in 12th Army Group Headquarters. All of the principal commanders and staff officers assigned to these two important headquarters were soundly based in traditional broad front operations by infantry. The concepts of battle and of logistical support originating in these headquarters displayed a uniform lack of imagination in concepts of mobility. A mobile-minded subordinate, General Patton, frequently achieved limited successes by circumventing his superiors, but he was not even able to destroy the German Fifteenth Army which extricated itself from France, established a defensive position, and inflicted very



De Gaulle

heavy casualties before being driven out.

General Chaffee had envisaged a mobile force including armored corps and armored armies. But before the battle was joined the armored corps was abandoned and all ideas of armored armies discarded in favor of a more even distribution of mobile troops throughout the field forces. For example, during operations in Europe a typical American corps included one armored and two infantry divisions and, in time, each infantry division included one or more separate tank battalions. Such an allotment of armored elements did not materially increase the mobility of infantry divisions or corps. But, on the contrary, it precluded the creation of efficient armored corps and armies

capable of cross-country mobility in all their parts. This inevitably led to operations on a broad front with lack of armor concentration at points of main effort. Consequently, the Anglo-American campaign in the West was a conventional operation in which superior numbers of men and equipment overcame a failing enemy, hopelessly thrown back everywhere upon the defensive. The possibility existed for a classical and speedy victory of enormous proportions. But this would have required the concentration of a highly mobile armored army on the right flank, backed with adequate logistical support both on the ground and from the air. The actual performance of General Patton's Third Army on the right flank during its drive across France furnished only a hint of what might have been accomplished by an adequately supported armored army on that flank. General Patton was mobile-minded but his army was only a typical American army, not an armored army, and lacked the necessary logistical support from the air and on the ground. This support could have been furnished had higher staffs been mobile-minded in sufficient time to prepare the means. Little could be done by improvisation.

A contributing factor to the mediocrity of the Anglo-American victory in Western Europe during World War II, one which clearly indicated the lack of mobile mindedness, was the multiplicity of overstuffed headquarters in the chain of command and the excessive control exercised by these headquarters. From the divi-



Liddell Hart U.S. Army

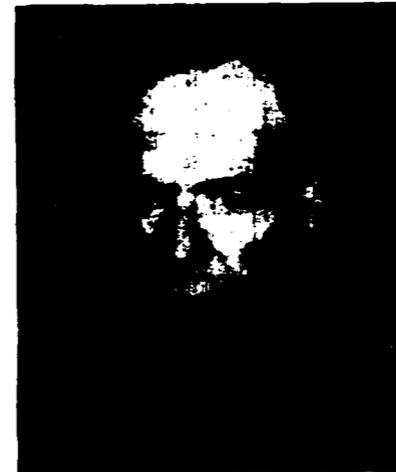


Fuller British Official

sions and corps, the chain extended back through army, army group, and Allied Force to the Combined Chiefs of Staff and the Chiefs of State—Churchill and Roosevelt. This, however, does not reveal the real situation: because various headquarters had deputy commanders the practical effect was to still further lengthen the chain of command. Overstuffed staffs tended to slow down decisions, to retard the flow of information, and to delay the transmission of orders. Illustrative of overstaffing was General Eisenhower's headquarters which included more than 16,000 officers and enlisted men during operations and more than 30,000 by the time the occupation of Germany was under way. The troops serving under such command arrangements were not even capable of the mobility inherent in their equipment and organization. Sloth-like operations and a tendency to fall back upon the defensive inevitably resulted and were generally overcome by the initiative and resolution of troop leaders near the front.

American planners would do well to turn to history for a few basic principles concerning staffs rather than blindly accept the World War II pattern. Von Steuben was a capable general staff officer. He sums up his experience as follows: "My observation is where one person is found adequate to the discharge of a duty by close application, it is worse executed by two and scarcely done at all by three." Still later, General William T. Sherman, the outstanding Army commander of the Civil War, severely criticised large staffs in these

words: "A bulky staff implies a division of responsibility, slowness of action, and indecision, whereas a small staff implies activity and concentration of purpose." The severest criticism of an overlengthened chain of command has been made by the profound student of war, Clausewitz, who has said: "... an order loses in rapidity, force, and exactness if the graduation ladder down which it has to descend is long. . . ." Even if allowance was made for the simplicity of warfare during the days of Von Steuben and Sherman, little justification can be found for the excessively large staffs during World War II. Their conclusions still apply. Something must be done to prevent the staffs from degenerating into intellectual boondoggling. There are de-



Chaffee U.S. Army

grees of refinement in staff work which go far beyond the practical requirements of the armed forces and a marked tendency for intellectuals to worm their way into such work. This tendency should be resisted in order that the intellectuals may shoulder their full responsibilities as fighting men and leaders.

Sufficient information is not yet at hand to fully analyze the Soviet performance in Eastern Europe but enough information is available to indicate that the Communists' performance on that front was rather mediocre considering the means at their disposal, the nature of the terrain over which the fighting took place, the determination of Hitler to hold ground, and the weight of the ground and air effort of the Allies

from the West. With a few exceptions, notably the Russian breakthrough and advance to Warsaw in the summer of 1944, the Soviet effort was little more than a methodical advance on a broad front during which German resistance was simply ground underfoot.

The American situation following World War II was that of a victor with all the advantages and disadvantages that usually accrue to a nation under such circumstances. Having destroyed the menace posed by the German and Japanese war machines, with the help of allies, it found itself one of the two remaining great powers. Unlike the other, however, the United States, while retaining the atom bomb, abandoned its armed forces and lost, through improper storage, or scrapped its military equipment. On the other hand, the Soviet Union retained its armed forces and equipment and adopted a line of action diametrically opposed to that of its former associate. As a result of these opposite decisions, preponderance of force almost immediately passed to the Soviet Union and led it to become increasingly belligerent in all its actions. To rectify the imbalance it had itself created, the United States was forced to expand its armed forces and to initiate an enormous re-armament program. Herein is found the opportunity of all nations which build their military organization and armament last.

Following World War I, Germany was stripped of armament and denied the right to build certain types such as tanks and airplanes. On the other



Sherman Library of Congress

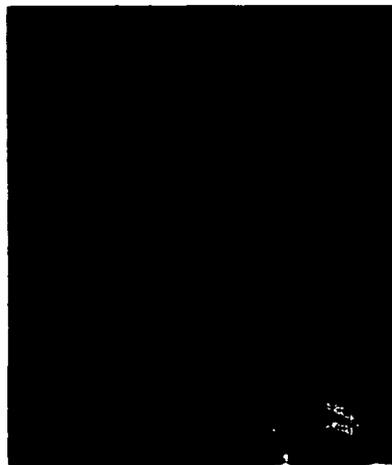
hand the Allied nations retained old armament and expended little upon new developments. When Germany rearmed, it took advantage of considerable research into the weapons of other armies but neither copied the old ones they had been compelled to abandon nor the new ones of other nations. It developed weapons and organization with which to destroy the armed forces of its prospective enemies. Following World War II the United States demobilized its armed forces and scrapped about 80 per cent of its equipment while the Soviet Union retained the mass of its equipment. Consequently, it created for the United States the same advantage that Germany had following World War I. Taking a lesson from German experience, military forces and equipment retained by the Soviet Union could have been rendered utterly obsolete by developing a more flexible and mobile organization with superior weapons. When caught in a predicament such as that of the United States, however, the natural tendency is to develop quickly the military organization and equipment necessary to counter the enemy rather than those intended to defeat and destroy him. This natural tendency is, therefore, defensive and static and not offensive and mobile and should be avoided.

There is already certain evidence to show that American civilian and military leadership has followed the natural tendency and has lost faith in the most mobile ground weapon—the tank. In this connection we need only recall the statement of Secretary of the Army Pace to the West Point cadets on 6 June 1950:

The principles of the recoilless weapon, the bazooka, and the shaped charge are being developed to a point where the mechanized panzer blitzkrieg will play a much less decisive role than it did in the last war.

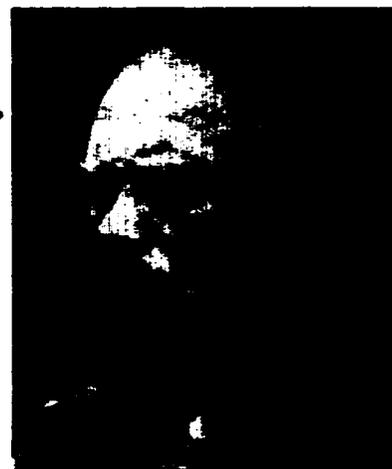
Adding to those the more recent developments with regard to guided missiles and rockets, target seeking equipment, and the possibilities of tactical use of atomic weapons, it may well be that tank warfare as we have known it will soon be obsolete.

In addition to official pronounce-



Patton U.S. Army

ments indicating a loss of faith in mobility and the mobile arm, the post-war field exercises have written out this lack of faith on the ground. There is, however, evidence to show that our leaders have put their faith in airborne troops which some of them consider to have the highest order of mobility. General Bolte has said that our objective is airborne armies. But an analysis of the facts will show conclusively that airborne troops are the least mobile of all ground fighters, although primarily for offensive warfare and tied to other ground elements. For example, on several occasions in World War II, it was planned to use airborne troops but ground elements had already seized the objective before they could be launched. Unless carefully coordinated with armored elements, airborne troops are inevitably drawn into piecemeal action at a time when they are bruised,



Guderian Wide World

battered, and confused by the landing. At the very best they are but light troops incapable of sustained action or of standing against heavily equipped, mobile ground troops. There is a role for airborne troops, but it is not to win wars by themselves. Such troops are of highest importance to armored corps and armies in seizing defiles and airfields essential for rapid sustained operations and in partisan activities behind the enemy's front. Airborne and armored elements and air forces must be trained together continuously if they are to function efficiently as a team.

The defensive mindedness of our current leadership has led to the parceling out of mobile armored troops and of permanently tying them to the capabilities of foot soldiers having only a nylon suit and a steel helmet to protect them from enemy fire. This dispersal of the mobile elements of the Army will lead to static actions on a broad front and, even if successful, will result in position warfare based upon mobile equipment, fire power, and manpower. This is just as fallacious as the passive defense based on field fortifications, obstacles, mines, and fire power such as the Maginot Line. Decisive results can never be achieved by such immobile measures.

If the United States abandons the dominant principle of mobility in favor of the static concept, it will forfeit its best chance of winning the next great war. It lacks the necessary manpower for such a concept. Besides, such a concept would be faulty even if the manpower were available. If the genius of the American people is fully employed in developing the forces required to win the next war, advantage would be taken of their mechanical ability and productive capacity. This would lead to the organization of armored, full-tracked corps and perhaps armies capable of being operationally and logistically supported from the air and of operating in the great plains areas of the world towards decisive geographical, political, and production centers without regard to frontiers or linear defenses established by the enemy and would lead also to the organization of light troops capable of effecting the final subjugation, occupation, and administration of territories overrun by the

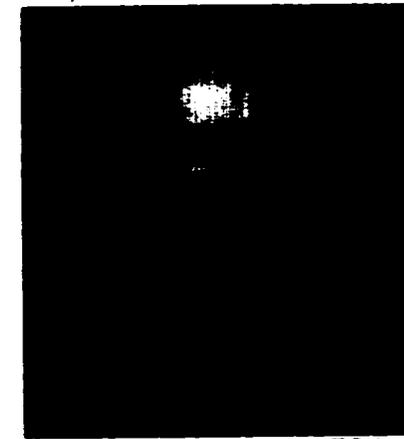
mobile army.

The modern mobile army should be capable of operating logistically from landing areas in much the same way that fleets operate from naval bases. Advance into hostile territory should be from landing areas to landing areas and operations should be extended from such areas as bases. Such an organization, coordinated with a dominant and properly constituted air force capable of all support missions including the delivering of essential airborne troops and the atomic bomb, could overwhelm any armed force that exists in the world today. With it the true genius of our native military leadership would rise again to the level set by General Grant and his mighty team of Meade and Sheridan in the east and Sherman in the west and south. In cooperation with the blockading fleets at sea this combination brought the Civil War to an end. A proper mobile force, with up-to-date support in the air and on the sea and with the guidance of gifted leaders, might again take the risk, incident to a deep penetration into the enemy's heartland, that Sherman took, and would reap an even greater harvest. The logistical plan for Sherman's operation contemplated living off the country, but his wagon train carried the minimum requirements necessary to reach a base at Savannah, Ga. That was the reserve that reduced considerably the risk he took.

It is the historical example that needs careful study by those who would fully exploit the possibilities of mobile warfare in this era of cross-country tracked vehicles, airplanes, guided missiles, and atomic bombs. Air power has made it possible for an armored force, completely mounted in cross-country fighting vehicles, to operate on land in much the same fashion as an air-supported fleet operates on sea. This modifies the orthodox concepts of linear or broad front tactics and of secure lines of ground communications in war.

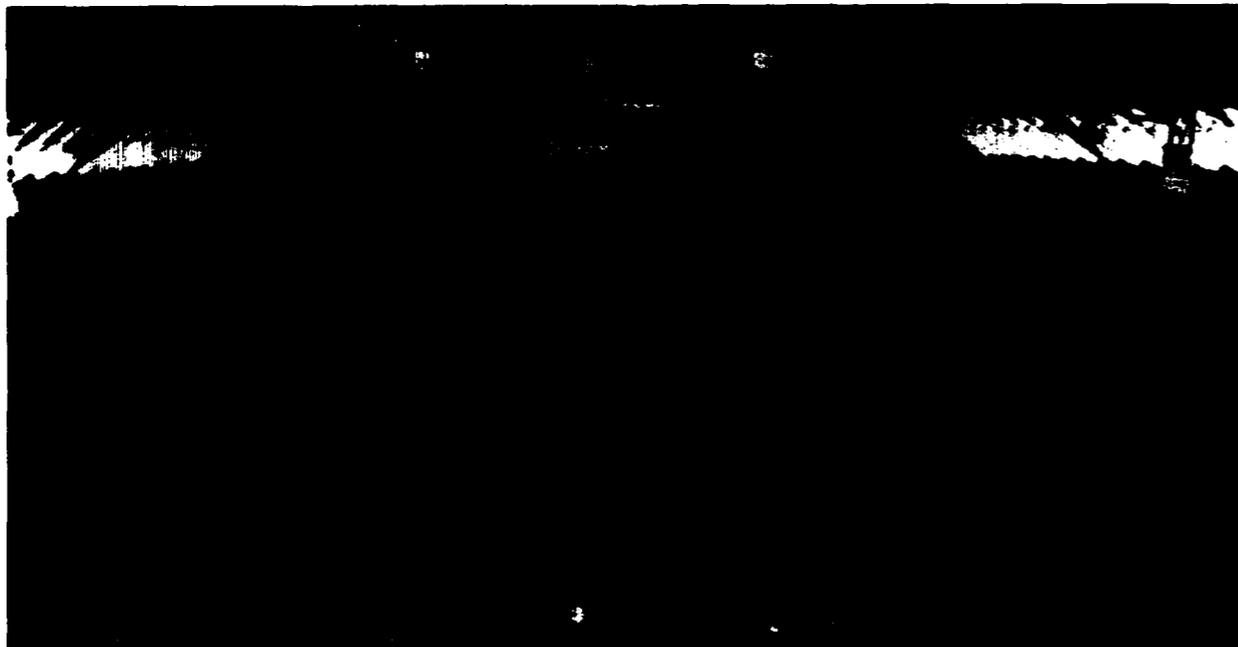
The problem of combining air power and mobile ground forces into an offensive team is the challenge that confronts American military leadership in the dangerous days that lie ahead. This is the combination that can relieve the infantry of the bloody battles of broad front operations.

## THE NEW EIGHTH ARMY COMMANDER



Lieutenant General Maxwell D. Taylor

Maxwell Davenport Taylor . . . born in Keytesville, Missouri in 1901 . . . Attended Kansas City Junior College . . . graduated from USMA, June 12, 1922 and commissioned a second lieutenant in the Corps of Engineers . . . assigned to the Engineer School, Fort Humphreys, Virginia . . . upon completion of course transferred to the 17th Engineers, Camp Meade, Maryland . . . assigned to Schofield Barracks, Hawaii with the 3rd Engineers and became aide to the Commanding General of the Hawaiian Department . . . assigned to the 6th Engineers at Camp Lewis, Washington . . . transferred to the Field Artillery in July, 1926 and assigned to the 10th Field Artillery . . . assigned to Paris, France to study French in preparation for service at West Point . . . in September, 1927 assigned to the Academy as instructor of French and assistant professor of Spanish . . . he entered The Artillery School at Fort Sill, Oklahoma in 1932 and upon completion was immediately ordered to the Command and General Staff School, at Fort Leavenworth, Kansas . . . stationed with the American Embassy at Tokyo as a student of the Japanese language . . . in September, 1937 detached for duty at Peking, China as assistant military attache . . . returned two months later to his post in Tokyo . . . enrolled in the Army War College, Washington in 1939 . . . upon completion he was detailed to the Latin American countries on a special mission concerning hemisphere defense . . . assumed command of 12th Field Artillery Battalion at Fort Sam Houston, Texas . . . assigned to the Office of the Secretary of the General Staff . . . in July, 1942, transferred to Camp Claiborne, Louisiana as Chief of Staff of the 82d Infantry Division . . . instrumental in organizing the first Airborne Divisions of the Army, becoming artillery commander of the 82d Airborne Division . . . went overseas with 82d in March, 1943 and took part in Sicilian and Italian campaigns . . . during Italian campaign he was senior U. S. member of Allied Control Commission in contact with Italian Government . . . appointed Commanding General, 101st Airborne Division in March, 1944, which he led in the airborne invasions of Normandy and Holland and campaigns of the Ardennes and Central Europe . . . appointed Superintendent of USMA in September, 1945 . . . assigned as Chief of Staff, EUCOM in January, 1949 . . . became U. S. Commander of Berlin the following September . . . appointed assistant Chief of Staff for Operations at Army Department Headquarters in February, 1951 . . . became Deputy Chief of Staff for Operations and Administration of the Army . . . appointed Commanding General of Eighth Army in Korea in February, 1953.



Woltz Studio



*a feature folio*

## *The Armor Association Meets*

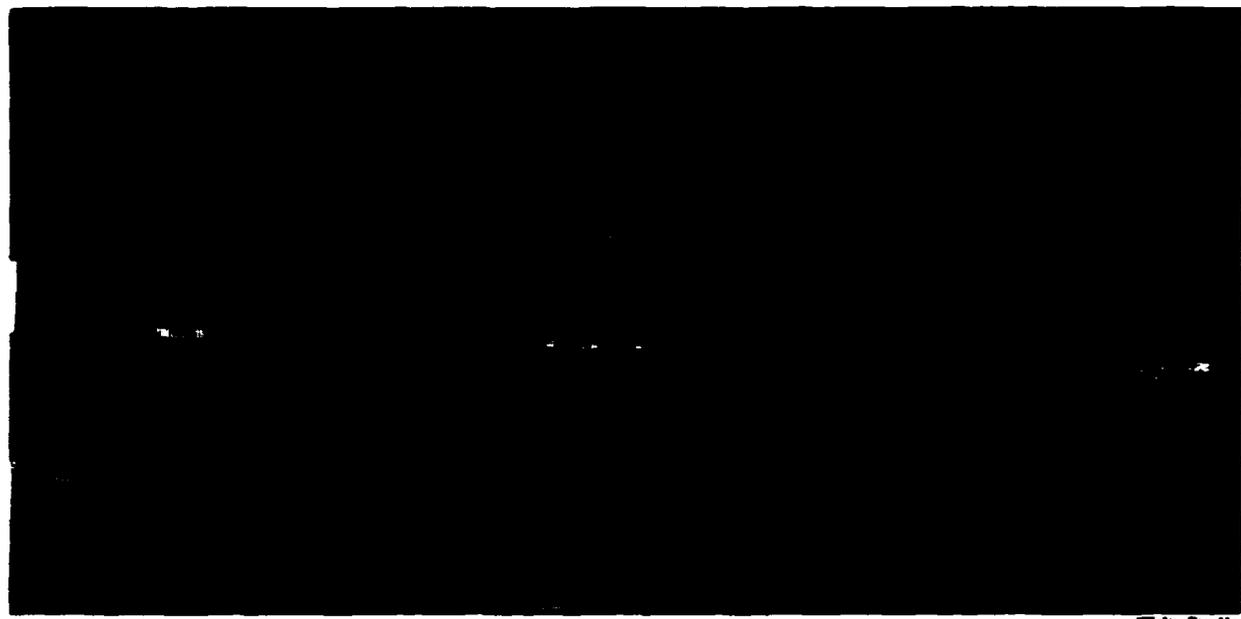
The  
Program

Honors for visiting general officers in front of the Headquarters Building, The Armored Center, at 8 A.M.  
 Address of welcome by Maj. Gen. John H. Collier, commander of The Armored Center, in Theater Number 1.  
 Opening of the 64th Annual Meeting by Lt. Gen. Willis D. Crittenberger, president of the Armor Association.  
 Introduction of and pace-setting address by Lt. Gen. Edward H. Brooks, Commanding General of the Second Army.  
 Business session, including the annual report of the Secretary-Treasurer-Editor and election of officers.  
 Impromptu panel discussion moderated by Maj. Gen. Bruce C. Clarke, the volunteers discussing modern warfare.  
 Dedication of the Court of Honor at the flagpole before Post Headquarters, with address by Gen. Collier.  
 Assembly in Sadowski Field House and introduction of the principal guest speaker by Gen. Crittenberger.  
 Feature address by General Jacob L. Devers, Chief of the Armored Force in the period 1941 to 1943.  
 Demonstration by Army Field Forces Board Number 2 of the latest armor and engineer equipment.  
 Reception and dinner with brief talks by distinguished guests, including Army G4 Lt. Gen. W. B. Palmer.

The Proceedings  
 The Feature Address  
 The Annual Report  
 The New Council  
 The Court of Honor  
 The Salutes

*through page 23*





Wolfe Studio

## The Sixty-fourth Annual Meeting of The United States Armor Association

**A**TOMIC firepower will not eliminate armor: it will supplement and improve it, and require it for delivery."

With that phrase, General Jacob L. Devers, delivering the principal address before the 64th Annual Meeting of the United States Armor Association at Fort Knox, Kentucky, on Friday, January 30th, confirmed the past and certified the future of armor.

The World War II Armored Force commander was one of a large group of professionals on hand for the yearly gathering of the organization of mobile warfare.

Assembled in Theater Number 1 at the Home of Armor for the morning session, including the business meeting, were some 400 members of the Armor Association, from all parts of the country, including many of the top figures in the field as well as a cross section of all ranks—the backbone of the Armor branch.

Upwards of a thousand members on duty around the world were represented by proxy, combining with those present to constitute well over the quorum requirements.

Among those attending, in addition to General Jacob L. Devers, were Lieutenant General Willis D. Crittenger, Retired, president of the Armor Association; Lieutenant General Geoffrey Keyes, Director of the Weapons System Evaluation Group; Lieutenant General Edward H. Brooks, Commanding General of Second Army; Lieutenant General Williston B. Palmer, Assistant Chief of Staff, G-4, Department of the Army; Major General Hobart R. Gay, Commanding General, VI Corps; Major General John H. Collier, Commanding General of the Armored Center and School; Major General Bruce C. Clarke, Commanding General, 1st Armored Division; Major General Donald W. McGowan, Commanding General 50th Armored Division, N.

G.; Major General John B. Wogan, Retired; Major General R. W. Stevens, Commanding General, 3d Armored Division; Brigadier General R. L. Howze, Assistant Commandant, The Armored School; Brigadier General L. L. Doan, Assistant Division Commander, 1st Armored Division; Brigadier General Clayton P. Kerr, Assistant Division Commander, 49th Armored Division, N. G.; Brigadier General Harry H. Semmes, USAR, World War I Tank Corps member; Colonel William P. Withers, president of the Armor Development Board; Colonel Welborn G. Dolvin, Combat Arms Section, Research and Development Division, G-4, Department of the Army; Colonel Robert J. Icks, Ordnance USAR, author of the book *Tanks and Armored Vehicles*; Colonels M. W. Frame and E. C. Doleman of the Armor Section of Command and General Staff College; Lieutenant Colonel Edward Bautz, Jr., Office of the Armor Inspector,

OCAFF; Major L. W. Wright, Aviation Officer, 1st Armored Division; Garrett Underhill, writer and Soviet Armor authority; Quintas Frederickson, president of the 7th Armored Division Association; Major William G. Bell, Secretary of the Armor Association and Editor of AMOR; and many other members of Armor of all components—Regular, Reserve and National Guard—including student, staff, troop and faculty personnel.

Major General John H. Collier, Commanding General of the Armored Center and host to the meeting, opened the day's program and the morning session with a warm welcome and the introduction of Association president Lieutenant General Willis D. Crittenger.

General Crittenger, in turn, introduced Lieutenant General Edward H. Brooks, Commanding General of Second Army, who set the pace for the day with a dynamic appeal for consideration of massed armor organizations in place of smaller tank units scattered among infantry divisions.

Declaring that in an all-out war, armored corps, and if necessary armored armies, should be used, General Brooks said, "We can't afford to scatter our shot in an all-out war with a major power." He went on to express the need for consolidation of tank units in order to force, and prosecute, a war of movement to an early and successful conclusion, pointing out that "only massed armor can provide the fast, hard-hitting, destructive mobile force and firepower which can

### SOME OF THE SALUTES FROM AROUND THE WORLD

When the 64th Annual Meeting of the Armor Association was called to order, many of its members who were unable to be on hand were represented by salutes sent forward from posts around the world perimeter. Many friends of the Association also sent messages. Among those from whom cordial salutes were received:

LT. GEN. I. D. WHITE  
and the Armor personnel of X Corps

MAJ. GEN. GUY V. HENRY, RET.  
Canadian-U.S. Joint Defense Board

MAJ. GEN. ARTHUR G. TRUDEAU  
and the 1st Cavalry Division

BRIG. GEN. WILLIAM J. BRADLEY  
Asst Div Cdr, 1st Cav Div

COLONEL BRIARD P. JOHNSON  
and CCB, 2d Armored Division

COLONEL HOWARD SNYDER  
and the 6th Armored Cavalry Regt

HANSON W. BALDWIN  
Military Editor, *New York Times*

MAJ. GEN. ERNEST N. HARMON, RET.  
President, Norwich University

MAJ. GEN. GEORGE W. READ, JR.  
and the 2d Armored Division

MAJ. GEN. ALBERT SIDNEY JOHNSON  
and the 49th Armored Division, NG

BRIG. GEN. JOHN C. MACDONALD  
MAAG, Formosa

COLONEL W. E. ECKLES  
and the 2d Armored Cavalry Regt

COLONEL RAYMOND W. CURTIS  
and the 14th Armored Cavalry Regt

GEORGE FIELDING ELIOT  
Military writer and commentator

Unfortunately space does not permit publication of the warm expressions which were presented to the assembled membership at the annual meeting.

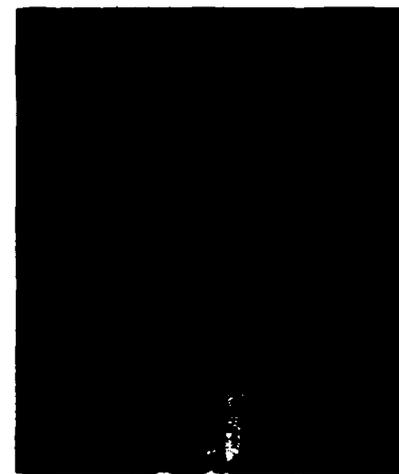
strike deep within the enemy's positions, disrupting his communications, disorganizing his reserves, destroying his artillery and defeating his armor."

Moving into the business session, the Executive Council took the stage and the president called the meeting to order. Present on stage were Generals Devers, Crittenger, Keyes, Brooks, Gay, Collier, Clarke, Semmes and Kerr (substituting for General Albert S. Johnson); Colonels Polk and Dolvin; and Major Bell.

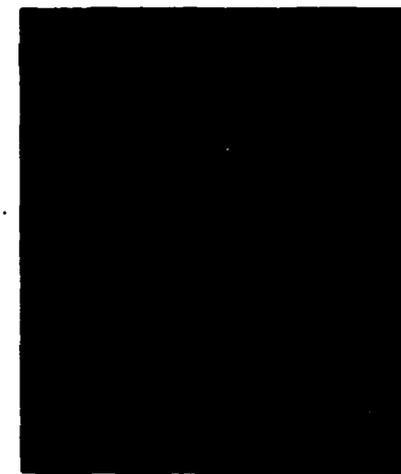
The reading of the minutes of the previous meeting was dispensed with, and the Secretary then read the Annual Report (which appears elsewhere in these pages) covering the financial and general affairs of the Association.

Acceptance of the Annual Report was followed by the consideration of a slate of officers for 1953. General Collier, Chairman of a Nominating Committee appointed in September and including a Guardsman, Major

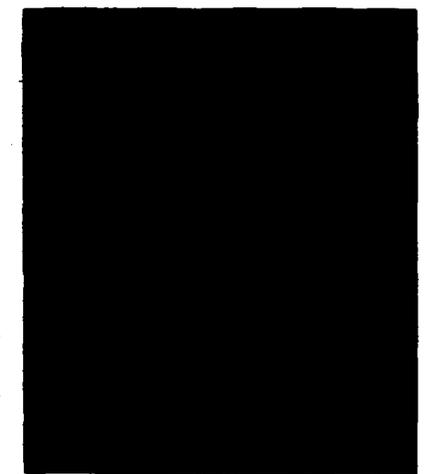
### The Speakers



Gen. Devers



Gen. Brooks



Photos by Ft. Knox PIO  
Gen. Crittenger

General Donald W. McGowan, and a Reservist, Colonel Herbert H. Frost, took over the chair to read a proposed slate of candidates for nomination. One open position was filled by a nomination from the floor. The election of officers followed with the slate as proposed being carried unanimously.

There being no further business, General Crittenger extended to General Collier, and the Armored Center, School and Board, the warm appreciation and thanks of the entire membership. The business portion of the meeting was then adjourned.

A new feature of Association meetings got under way next when General Crittenger introduced Major General Bruce C. Clarke to preside over a strictly unrehearsed panel discussion. General Clarke, in taking the podium, called for twelve volunteers in the audience, below the grade of colonel, to fill the seats vacated by the Council. At the same moment, the entire group was receiving a set of prepared questions covering various phases of warfare—tactics, strategy, organization.

One lieutenant, three captains, two majors and six lieutenant colonels took the stage where, with General Clarke as moderator, each spoke extemporaneously on his personal choice of questions for a period of five minutes. At the conclusion of the hour, the podium was made available to several volunteers from the audience to discuss the thoughts expressed by the panel.

The panel discussion served as a fine illustration of professional qualification. The manner in which the volunteers stepped forward to express themselves on a variety of subjects with no preparation of material or thought was a tribute to the participants and the group they represented. The tremendous interest generated by this highly successful feature assures its perpetuation.

From Theater Number 1 the scene now shifted to the Parade Ground and the dedication of the Court of Honor.

In the postwar period, the veterans of the several armored divisions active in World War II, desirous of maintaining the worthwhile ties developed during wartime association, formed separate division organizations. The respective armored division associations, never forgetting the comrades who failed to return, several years ago put in motion a plan to honor them. The result of their planning was the Court of Honor, fittingly dedicated at the Armored Center on the occasion of the Armor Association annual gathering.

The Court of Honor consists of a series of plaques grouped about the flagpole near the Center Headquarters and representing the sixteen armored divisions of World War II. In an impressive ceremony, under the guns of six M47s, and with an honor guard and band, the plaques were unveiled following a dedicatory address by General Collier.

Over 1600 officers were assembled

at Sadowski Field House for the opening of the afternoon session of the Association meeting—the feature address of the day-long program, by the man who guided our Armored Force in the critical early days of the late war; who went on to command the Sixth Army Group in the European Theater; and who, as commander of Army Field Forces in the postwar period until his retirement in 1949, had a close association with the projection of armor in our Army.

General Devers opened his remarks with an appropriate historical setting of the armor picture. Pointing up the integration of the fighting ground forces which took place at Fort Knox, and reviewing the personalities and organizational steps which had centered there, he moved in on the basic principles. "The combat soldier," said the former Field Forces commander, "has a profession second to no other profession of mankind. No longer can it be said that the skills of the other professions require more intelligent or more highly educated men—for there is no greater skill than that required to stay alive on the battlefield and at the same time carry out the mission of defeating the enemy—performing this task in all kinds of weather and under all kinds of conditions. Each man is a potential leader of himself, then of a team, and then of many teams."

Stating that armored divisions "are not obsolescent in any sense of the word," General Devers went on to say that atomic firepower, rather than eliminating armor, "will supplement and improve it, and require it for delivery." He deplored the weight and cost of our present day tanks and questioned why we stick to our present design. "The turret is the weakest link and the tracks are extremely vulnerable and heavy."

Noting that in the "history of military operations the development of new equipment has dictated the evolution of tactics," General Devers outlined a family of air transportable armor equipment that reflected the marriage of aircraft and ground equipment design. "It is my belief that through such a design philosophy must come the next stage of the evolution of all military equipment and new concepts of ground force operations."

"Since the days of Van Voorhis and Chaffee, when the principles of armored warfare were worked out and the necessary equipment was developed, there have, of course, been changes and improvement in equipment. But the overall methods of warfare have changed—and Armor is now faced with two problems that it must solve quickly and well . . . weight and mobility."

"Those of us," concluded General Devers, "whose prime interest is Armor must shake ourselves out of old grooves and make some radical changes to insure that quick thrust forward."

Following the feature address of the day, the scene shifted outdoors once again and to Army Field Forces Board Number 2 for a demonstration of equipment of all types, including tanks, trucks, special purpose vehicles and engineer equipment. From an introduction by Board president Col. William P. Withers, various of the project officers and section personnel described the equipment on view for the professional audience. This demonstration concluded the afternoon period.

The day's ceremonies were enjoyably capped with an evening dinner. Among several informal speakers were Lieutenant General Williston B. Palmer and Lieutenant General Geoffrey Keyes.

In a message to the Association, Lieutenant General Lyman L. Lemnitzer, Deputy Chief of Staff for Plans and Research, Department of the Army, made the following comment:

"The past record of Armor vividly emphasizes its potential. In this day and age, the advent of each new and more powerful weapon and accompanying changes in our tactical concepts of ground operations have served to increase our capability of exploiting decisively on the battlefield the mobility, firepower, and shock action which armor so generously contributes to our modern battle team.

"I can assure you that our research efforts in the Department of the Army are consistently and vigorously focused upon qualitative superiority in the matériel field. In this research and development field, armor is accorded a high priority in consonance with its battlefield potential. The new

tanks and other equipment which you will see demonstrated represent long strides toward our goal of providing our battle team with maximum striking power. Our research must and will insure that Armor is not handicapped in applying its decisive potential on the battlefield. Matériel superiority coupled with the initiative, the ingenuity, the determination and the courage of the American soldier—guided by the type of leadership that has characterized Armor in the past—will insure the success of our battle team in modern warfare."

The 64th Annual Meeting of the United States Armor Association was a great success. Not a little of its

success was due to the hospitality and arrangements of General Collier and the Armored Center, and the many agencies and individuals who contributed to the program, including notably Colonel Henry Newton and his committee.

Normal rotation and assignment changes permitted attendance of a group of members who were unable to be on hand last year; an annual turnover should see all members participating in one or another of the annual gatherings in the future. Bigger and better is the theme—aimed at the ultimate goal—that of insuring that American Armor is the best in the world.

## A MESSAGE FROM LT. GEN. LYMAN L. LEMNITZER

*Message of Lieutenant General Lyman L. Lemnitzer, Deputy Chief of Staff for Plans and Research, Department of the Army, to the annual meeting of the Armor Association, Fort Knox, Ky., 30 January, 1953:*

I deeply regret that the press of official duties has precluded my attending the Annual Meeting of the Armor Association. Particularly do I regret missing the opportunity to meet and to associate with the distinguished leaders who are with you on this occasion—many of them are intimate friends of mine.

Despite my absence, I would like to convey a few thoughts to you. Anyone involved in Army planning as I am cannot help but react to the tremendous potential of Armor in modern warfare. The history of World War II emphasizes the decisive role played by Armor as a member of our battle team of combined arms and services. The Court of Honor which you are dedicating is a solemn tribute to those who contributed so valiantly to the past achievements of Armor.

The past record of Armor vividly emphasizes its potential. In this day and age, the advent of each new and more powerful weapon and accompanying changes in our tactical concepts of ground operations have served to increase our capability of exploiting decisively on the battlefield the mobility, fire power, and shock action which Armor so generously contributes to our modern battle team.

I can assure you that our research efforts in the Department of the Army are consistently and vigorously focused upon qualitative superiority in the matériel field. In this research and development field, Armor is accorded a high priority in consonance with its battlefield potential. The new tanks and other equipment which you will see demonstrated represent long strides toward our goal of providing our battle team with maximum striking power. Our research must and will insure that Armor is not handicapped in applying its decisive potential on the battlefield. Matériel superiority coupled with the initiative, the ingenuity, the determination and the courage of the American soldier guided by the type of leadership that has characterized Armor in the past—will insure the success of our battle team in modern warfare. I am confident that you of the Armor Association will successfully shoulder your responsibilities of leadership in attaining this objective.

Again may I express my regrets for my being unable to be with you. I am certain that each of you present will have enjoyed a most pleasant and profitable reunion.

In Theater No. 1 a portion of the Association members are seen listening with interest as volunteer panel members on stage discuss armor and modern warfare.

# The Annual Report of the Secretary-Treasurer-Editor

To the Members of the United States Armor Association:

Submitted herewith, as required by the Constitution, is the report of the Secretary-Treasurer-Editor, covering the general affairs of the Association for the year 1952:

## GENERAL

### The Association

The annual meeting of the Armor Association has great significance, not only as an occasion to review the year gone by, but as a vantage point from which to view the year ahead.

The Armor Association's Year 1952 opened auspiciously when on January 14th the Chief of Staff of the United States Army joined the largest annual gathering in the organization's history to deliver a major address of prime importance to mobile warfare and its specialists. General Collins' presence was at once a tribute to the past and an augury for the future.

The tremendous success of that 63d Annual Meeting generated an upswing in membership and set a pattern for coming years. The net result has been a desirable increase of attention to the status of membership in the Association rather than the somewhat detached feeling of being only a subscriber to a magazine.

Since the degree of activity of the organization is based to a great extent upon its financial condition, it is inter-

esting to note that receipts for the year just completed topped \$31,000. This was \$5,000 over 1951, \$15,000 over 1950.

The members of the governing body continued through the entire year to represent the membership through active and intimate interest in all Association affairs. Many activities were reviewed and discussed at a formal Council meeting on September 18th.

In support of the Reserve program, the Association initiated in 1952 a certificate award to outstanding senior cadets in the senior ROTC schools conducting Armor courses. Presentation was inaugurated at 1952 graduation exercises. This will be a continuing annual award.

At midyear the Association released its single civilian employee, thus placing its staff operation on a strictly active duty basis. The saving in salary was somewhat offset in the latter part of the year with the loss of the account of 11th Armored Division Association, whose affairs had been handled by the Armor Association for several years for a standard fee.

In the Fall of the year the termination of the Association's lease on space at 1719 K Street in Northwest Washington occasioned a move of the headquarters to new space at 1727 K Street, resulting in an unforeseen expense on moving and a slightly increased rent. The Association now occupies its fourth location in the Nation's Capital since the move there some twenty-three years ago.

Also in the Fall, a continuing bid by the Association of the U. S. Army and its *Combat Forces Journal* to draw the Armor Association and ARMOR into a merger produced a series of high level discussions among representatives of the respective ground arms associations, with no action on our part beyond the expression of views set forth editorially in the closing issue of the year.

In October, Major William H. Zierdt, Jr., joined the staff as Associate Editor preparatory to assuming the post of Secretary-Treasurer-Editor following an appropriate period of overlap.

The move of the Association headquarters into more desirable space, complemented by the purchase of two new typewriters and the completion of payments on a new Graphotype addressing machine, saw the Association's physical plant in excellent shape at the close of the year. Over a two-year period the organization has spread into double its former space at double its former rent while holding a steady business gain and turning out a consistently improving product and service. We're in business and we mean it. The facilities now available are capable of handling a substantial additional expansion.

### The Magazine

In keeping with the trend, ARMOR magazine took on size during the year just completed. The first two issues ran at 56 pages; the next three were 64-pagers; and the last issue of the year was an 80-pager, first of its size since mid-1948 when a general trimming had been necessary to effect economy and improve quality.

Editorial policy in the year held to the main theme that

runs through our special field—the mounted soldier, the armored division, mobility in ground warfare—and the compelling need for an organization and magazine to represent it.

Entered once again in the American Institute of Graphic Arts annual Magazine Show, ARMOR repeated its 1951 award recognition with another Certificate of Excellence on the November-December 1951 entry, judged superior on three counts by a distinguished panel of judges from the editorial and publishing field.

During the year a total of 2,652 new subscriptions produced a net gain of 1,044 based on arbitrarily closed records as of December 31st. The magazine topped 5,500 paid copies for the first time, as against an estimated 1,800 paid copies being serviced at the close of the low period of the last decade, the year 1947.

The November-December issue, in size, content, authorship, layout, illustration and color, is a fair sample of a goal for levelling off in expense and quality. Sustained issue-by-issue gains during the coming year should allow similar issues as a goal, while yet providing an opportunity to strengthen the Association's financial base.

### The Book Department

Book Department receipts almost doubled in 1952 over 1951. The margin of profit made possible by publisher discounts was an additional assist in publishing the magazine.

Top selling book of the year was Guderian's *Panzer Leader*.

Although still on a somewhat humble scale, this subsidiary activity of the Association holds a great potential. Increased use of this service by all members and their families will aid our overall operations to a substantial extent. For although fiction, juvenile and other unrelated items are not covered through the magazine's Book Department, any book may be ordered and supplied.

Handling of a number of selected items published overseas, and careful coverage of the significant books in the field of publication, as a professional service equally as much as with a profit motive, have contributed to ARMOR's reputation, as has a continuing series of feature criticisms by "name" reviewers.

With increasing financial capacity, a program of limited stocking of worthwhile books was begun in 1952, resulting in savings through increased discounts and reduced postage charges, while allowing a more prompt filling of customer orders. This will be extended with care and within reason in coming months.

## SUMMARY

The points set forth here concerning all phases of activity add up to the fact that the Armor Association is a sound professional organization operating in a critical field, providing a valuable service for those who wish to take advantage of it. But so far as our professional family is concerned, the gap between Armor branch membership and Armor Association membership is great. Closing of that gap is a logical mission for the coming year. It is something in which the entire membership may join, secure in the knowledge that our aim as an Association goes well beyond a professional group, touching our Arm, our Army, and our Country.

ARMOR—March-April, 1953

## THE NEW COUNCIL

The Armor Association's distinguished governing body for 1953 embraces the field of armor. It includes all components of the Army. Members symbolize armor from the World War I Tank Corps, through the formative days of mechanization, across the battlefields of World War II, and to the campaign in Korea. An important addition is the Council Advisory Boards for the two major theaters. In combination, by individual, by position and by location, the Council represents Armor!!!—ED.

### Honorary President

MAJ. GEN. GUY V. HENRY

### President

LT. GEN. WILLIS D. CRITTENBERGER

### Honorary Vice Presidents

GENERAL JACOB L. DEYERS  
LT. GEN. ALVEN C. GILLEM  
LT. GEN. GEOFFREY KEYES  
LT. GEN. EDWARD H. BROOKS  
MAJ. GEN. ERNEST N. HARMON

### Vice Presidents

MAJ. GEN. HOBART R. GAY  
MAJ. GEN. DONALD W. MCGOWAN  
COLONEL HERBERT H. FROST, RES.

### Secretary-Treasurer

MAJOR WILLIAM GARDNER BELL

### Additional Council Members

LT. GEN. WILLISTON B. PALMER  
MAJ. GEN. BRUCE C. CLARKE  
MAJ. GEN. JOHN H. COLLIER  
MAJ. GEN. ALBERT S. JOHNSON, NC  
BRIG. GEN. PAUL D. HARKINS  
BRIG. GEN. PAUL M. ROBINETT, RET.  
BRIG. GEN. HARRY SEMMES, USAR  
BRIG. GEN. JOHN P. WILLEY  
COLONEL CREIGHTON W. ABRAMS  
COLONEL CHARLES E. DISSINGER  
COLONEL WELBORN G. DOLVIN  
COLONEL H. H. D. HEIBERG  
COLONEL HENRY CABOT LODGE, USAR  
COLONEL JAMES H. POLK  
COLONEL HARRY W. JOHNSON

### COUNCIL ADVISORY BOARDS

#### European Theater

MAJ. GEN. GEORGE W. READ, JR.  
BRIG. GEN. HAMILTON H. HOWZE  
COL. CHARLES E. BROWN  
COL. RAYMOND W. CURTIS  
COL. W. E. ECKLES  
COL. HOWARD M. SNYDER

#### Far Eastern Theater

LT. GEN. I. D. WHITE  
BRIG. GEN. WILLIAM J. BRADLEY  
BRIG. GEN. JOHN C. MACDONALD  
To be filled  
To be filled  
To be filled

## FINANCIAL REPORT

### THE UNITED STATES ARMOR ASSOCIATION 1952

#### CASH RECEIPTS & EXPENDITURES

Department	Receipts	Expenditures
ARMOR Magazine	\$24,355.13	\$18,950.16
Book Department	5,142.63	3,666.34
11th Armored Division Association	1,694.36	
Income from Investments	180.68	
District of Columbia Sales Tax	2.78	3.49
Withholding Taxes & Social Security		308.12
Miscellaneous	19.01	160.92
Postage		946.45
Office Supplies		320.73
Stationery & Printing		1,021.94
Telephone & Telegraph		559.21
Machinery & Equipment		1,174.20
Rent		1,845.00
Salary		922.90
Transportation Allowances		755.00
Transportation Expense		64.73
Janitor Service		122.00
Maintenance & Repairs		147.30
Moving & Drayage		178.75
Electricity & Power		46.70
Petty Cash Expenditures		115.00
Bank Charges		4.25
	\$31,394.59	\$31,293.19
Bank Balance 1 January 1952	309.19	
Adjustment (Check Returned)	4.75	
Bank Balance 31 December 1952		415.34
<b>TOTAL RECEIPTS &amp; EXPENDITURES</b>	<b>\$31,708.53</b>	<b>\$31,708.53</b>
Total Assets	\$9,632.67	
Total Liabilities	763.93	
<b>NET VALUE of the Association (31 December 1952)</b>	<b>\$8,868.74</b>	

before  
the  
United  
States  
Armor  
Association



Louisville Courier Journal

## Address of General Jacob L. Devers

**H**ERE at Fort Knox were developed great leaders of Armor—young and old—who brought order out of the chaos of ideas, equipment, and doctrine. Here the first integration of the fighting forces of the U. S. Army was conceived, went through its birth pains, and came out a team, coordinated in its simplest element and capable of accomplishing the impossible. The Infantry, Cavalry, Artillery, and Engineers discovered that they each had personnel who could command the others—that each was indispensable to the other—and that to be completely successful the fighting unit must also have the best possible supply services—that the unit was useless unless it was balanced with Signal, QM, Ordnance, and Chemical Warfare personnel—and properly supported by the Air Force and the Navy.

Here the Engineers developed the first successful rubber pontoon bridge. Here the Signal Corps learned that there must be better and simpler communications equipment. Here the Ordnance learned about power plants, maintenance, and spare parts. And here the Chemical Corps learned about the use of fire and the protection against gas.

It was here that the first light observer planes with civilian pilots—the Grasshoppers—were contracted for, in order to give eyes to Armor. Artillery, reconnaissance and command; and this act brought forcibly to the Air Command of the Army the necessity of thinking more about the combat soldier. The Armored Force—then the Armored Division—and finally the Armored Corps were born here.

In the Mechanized Headquarters at Fort Eustis, in 1931, General Van Voorhis, a Cavalryman with foresight and imagination, laid down the basic principles for the Armored Force. He was the wise prophet who looked into the future and saw the necessity of integrating the combat arms of the Service into a single team if Armor was

to be successful. He was the grandfather of Armor. Later, in 1940, General Chaffee, with a wide open directive from General Marshall, and with foresight and experience in organization, secured this post, created on paper and brought into being the Armored Force as you knew it during the war. He became the father of Armor. Out of this integration of the Services, came the young, aggressive leaders of Armor, each thinking only for the good of the whole.

Here was the first fighting combat team of the Army. If we could only have the foresight to put together today a similar fighting team of the Army, Navy, and Air Force—integrated and ready to go.

So much for history. It has a lesson and a theme song—and it has worked.

Now let me get back to basic principles—for it has been my desire and pleasure, since my retirement from the Army in 1949, to keep after greater fire power, better transportation, air transportability, and the logistics and economics that go with the fighting man. \* \* \*

The combat soldier has a profession second to no other profession of mankind. No longer can it be said that the skills of the other professions require more intelligent and more highly educated men—for there is no greater skill than that required to stay alive on the battlefield and at the same time carry out the mission of defeating the enemy—performing this task in all kinds of weather and under all kinds of conditions. Each man is a potential leader of himself, then of a team, and then of many teams.

You of the Armor Association know how important it is to take a man, no matter where he comes from, and train him to take care of himself, his weapons, and his transportation. It is necessary to give him faith or confidence in himself and, within his capabilities, responsibility to fit him into a team. His weapons must be of the

best. They must be as light as possible and must have great fire power. This means that there must be a combination of weapons varying in weight and fire power to give him flexibility in their use under all conditions of combat. Transportation must be of the best in order to transport him, his weapons—both individual and supporting—and his supplies quickly and easily to the point of contact with the enemy.

The basic element, then, of a fighting team is the combat soldier. He is supported by all the arms and services including the Air Force and the Navy.

This combat soldier finally finds himself in what today we call a division. It may be an Armored or an Infantry or an Airborne division.

Just as most industry is tied to its machine tools, in its search for new ideas and new approaches—so you are tied, in your search for better solutions in perfecting the art of fighting, to a division or a combat team. As a result of this organization and training, the fighting leader is frustrated in his efforts to improve his fire power and mobility because of weights and costs of equipment, both of which continue to mount.

As long as we have the present divisions and the equipment, there will always be Armored divisions; they are not obsolescent in any sense of the word and no matter where the battleground is, or what the weather may be, there will always be tanks and they will play a dominating role. \* \* \*

Atomic fire power will not eliminate Armor; it will supplement and improve it, and require it for delivery.

It is a source of great satisfaction to me that I have been able in the past few years to work with people outside the service who are seeking to develop equipment which will give to Armor a new flexibility. \* \* \*

If the transportation now used by the Army, both as weapon and personnel carriers—particularly the tanks and the bulldozers—can be made lighter and still perform their present functions, then the whole concept of the divisional organization could be changed and would result in reductions in types of weapons, trucks, tanks, and tractors and considerable reduction in the amount of manpower required behind the combat soldier at the front.

The big problem is weight. Weight costs money initially, and later, in operations it inevitably limits the use and thus the flexibility of the weapons or vehicles and adds to its complications. \* \* \*

Because of long experience in the development of tanks, their component parts, their maintenance, and the weapons and ammunition they carry, I have come to one fundamental conclusion which I believe is sound: The present tank carries around too much dead weight 90% of the time, costs too much initially, and costs too much to operate. Why do we stick to this design? With all its protection, the turret is the weakest link and the tracks are extremely vulnerable and heavy. In a matter of hours a tank column will destroy a million dollars worth of roads.

For some years, even back in 1941 and 1942, it was my opinion that we should go to wheels if possible. We even tried such a tank, but could not see the solution. We also tried to drive the tank with electric motors, but the design of the motors linked with the track approach was so heavy that it defeated the idea. Also, in those days we

did not know too much about waterproofing motors. \* \* \*

In the entire history of military operations the development of new equipment has dictated the evolution of tactics. It is my belief that through . . . a design philosophy that reflects the marriage of aircraft and ground equipment design must come the next stages of the evolution of all military equipment and new concepts of ground force operations.

If progress is to be made, you, the leaders in the military art, must have enthusiasm and persistence and must be constantly looking for a new and realistic approach . . . In modern times, with new fire powers already developed and being still further developed, mobility is more important than ever. This mobility must have flexibility and simplicity. Divisions must be reduced in manpower size and still gain fire power: the Division slice now figures at 55,000 for an 18,000-man Division, and is really 90,000; it must be cut in fact to 20,000 for a 10,000-man Division.

With the daily improvements in electronics, and the know-how and training of the individual, the "impossible" can still be attained.

Remember the rule of Armor:

A hole—a quick thrust which might continue indefinitely—1,000 miles more or less—and gasoline more than ammunition becomes the need. When the momentum is slowed, then stopped, it may take weeks to get going again.

Command is easy because of the men who lead and because of the training beforehand.

Brief directions, a little coordination, plenty of supplies, the will and the permission to go and ultimate recognition of the good work accomplished. These are the responsibilities of the Commander. Results: Casualties—few. Small losses come from deliberate planning and violent execution.

Remember—any great stride forward in the history of civilization—anything revolutionary in art or industry, in physical or medical science—anything of note that has been developed in the past has, in its early stages, been called radical, extreme, far-fetched, advanced, visionary, and impractical. Even anything unusual—anything that does not follow a pattern—is viewed with skepticism or downright scorn. People are prone to view with suspicion anything they don't understand, even though it has been proved beneficial. Furthermore, people are creatures of habit and inertia, and it takes a lot of prodding to induce them to accept new methods to replace old. \* \* \*

Since the days of Van Voorhis and Chaffee when the principles of Armored warfare were worked out and the necessary equipment was developed—there have, of course, been changes and improvements in equipment. The principles have remained essentially the same. But the overall methods of warfare have changed—and Armor is now faced with two problems that it must solve quickly and well—the problem of weight and the problem of mobility. [We must have] fire power and more fire power with better charges and fuses and better results at the end of the trajectory—mobility adapted to the air age with lighter equipment and lighter planes. \* \* \*

Those of us whose prime interest is Armor must shake ourselves out of the old grooves and make some radical changes to insure that quick thrust forward.



Wolfs Studio

## Dedicated to Our World War II Armored Divisions

# THE COURT OF HONOR

An appropriate event on the Armor Association program was the dedication of the Armor Court of Honor. Consisting of a series of bronze plaques set in stone and circling the flagpole on the Parade Ground before Armored Center Headquarters, the Court was dedicated in an impressive ceremony under the guns of six M47 tanks, with an Honor Guard and band, and the flags of the United Nations flying. Maj. Gen. John H. Collier made the dedicatory address in the program attended by many former members of the respective divisions, both active and non-active duty, and a distinguished group of visiting Armor greats.

### General Collier's Dedicatory Address

We have assembled here . . . to pay tribute to the sixteen United States Armored Divisions which fought so valiantly in World War II. We hope that at some future date it will be possible to commemorate the other armored units, the Groups and Separate Tank Battalions, which contributed so much to the defeat of our enemies.

Following World War II a program of naming buildings in the

Armored School area for graduates who were killed or fatally wounded in battle was initiated. From this came the suggestion that armored units also be recognized by some form of memorial. After considerable exploration the idea of a Court of Honor was born.

Division Associations were contacted and were found to be enthusiastic, but in some instances, not sufficiently well organized to underwrite

a share of the cost. Nevertheless, the planning went on. By last November the necessary funds had been accumulated. The support of the Armored Division Associations has been commendable. Three of those associations are represented here today.

This Court of Honor is to serve both as a memorial and as a reminder. It is a *memorial* to those men of Armor who served this nation in the most vicious and costly war yet experienced by mankind. It is a reminder that Armor was, and is, the Arm of Decision.

In Africa, in the Mediterranean, in Western Europe, it was Armor that disrupted enemy plans and paved the way for destruction of Hitler's army. Without Armor it is debatable that our forces could have broken out of the beachheads. Certainly the liberation of France and the Low Countries would have been

a much longer and costlier operation had we lacked Armor.

Tripoli, the Falaise gap, the Ruhr pocket, and the Remagen bridgehead were hastened by Armor. The rapid advances east of the Rhine River were spearheaded by Armor, and sealed the fate of Hitler's regime. American armor played a leading role on two continents, the African and the European. In the Pacific, tanks were always in demand but islands were not profitable areas of action for large armored formations. Furthermore, international agreements dictated *speed* in ending the fighting in Europe. For these reasons the great mass of our armor was sent to Europe where speed was a major consideration.

When Poland was invaded by the Germans we did not have *one* armored Division. On V-E Day we had *sixteen* armored divisions, all in Europe. They stretched from the Mediterranean through Italy, Czechoslovakia and Germany to the Baltic. American armor, in truth, reached from sea to sea. It had fought on the beaches, in mountains, on the desert, on the plains. It had fought in sunshine, snow, and mud, but armor fought.

Armored divisions are a studied mixture of men and matériel. They are *balanced forces of the combined arms*. In no other ground formation do you find the fire power *man for man*, the shock action and mobility that is built into the armored division. The men whom we honor today, the living and the dead, served in the divisions that engraved upon the memories of friend and foe alike, the truism that *Armor is the Arm of Decision*.

Today, as in the years gone by, no one *arm* wins a war. But wars still, and for many years to come, will be won by the victors of a series of battles. It is on the battlefield that Armor, in the space of a few years, earned its heritage. Armor is a weapon of aggressiveness, of opportunity, of exploitation, and of decision. It has in one package both offensive and defensive capabilities.

Push-button warfare is still a hope, not a reality. Until that distant day when science overcomes the raw struggle of masses of men, against masses of men, wars will be won on the ground. Until that distant day

when the will of one nation can be made to dominate the will of an equally determined nation, through as yet undeveloped means, the balance of power must remain with the one possessing the ability to penetrate, disrupt and destroy the capacity to resist on the ground.

We have not yet attained that vaunted status where robots will do our fighting. We have not yet reached that pinnacle of science from which a few hidden artisans can, by the flick of a switch, eliminate armed resistance and the will to preserve those principles for which a human being is willing to die. We are still in the age of wars fought in the mud, the snow, blistering heat and numbing cold. We live in the era in which man and the machine can triumph over man alone.

The armored division is a combination of man and machine, but it is a mixture in which man is the heart and brain. Its iron fist is the tank. Its stamina is *man*. Its blood supply is generated by the organic

services which provide communications, ammunition, fuel, rations and medical support. Its ability to reach out and inflict casualties is augmented by the artillery. Its ability to "stick" is enhanced by the armored infantry. Its crossing of barriers is facilitated by the engineers. It is the best ground weapon to form the air-ground team. Its blending of the several arms and services makes it a weapon of victory.

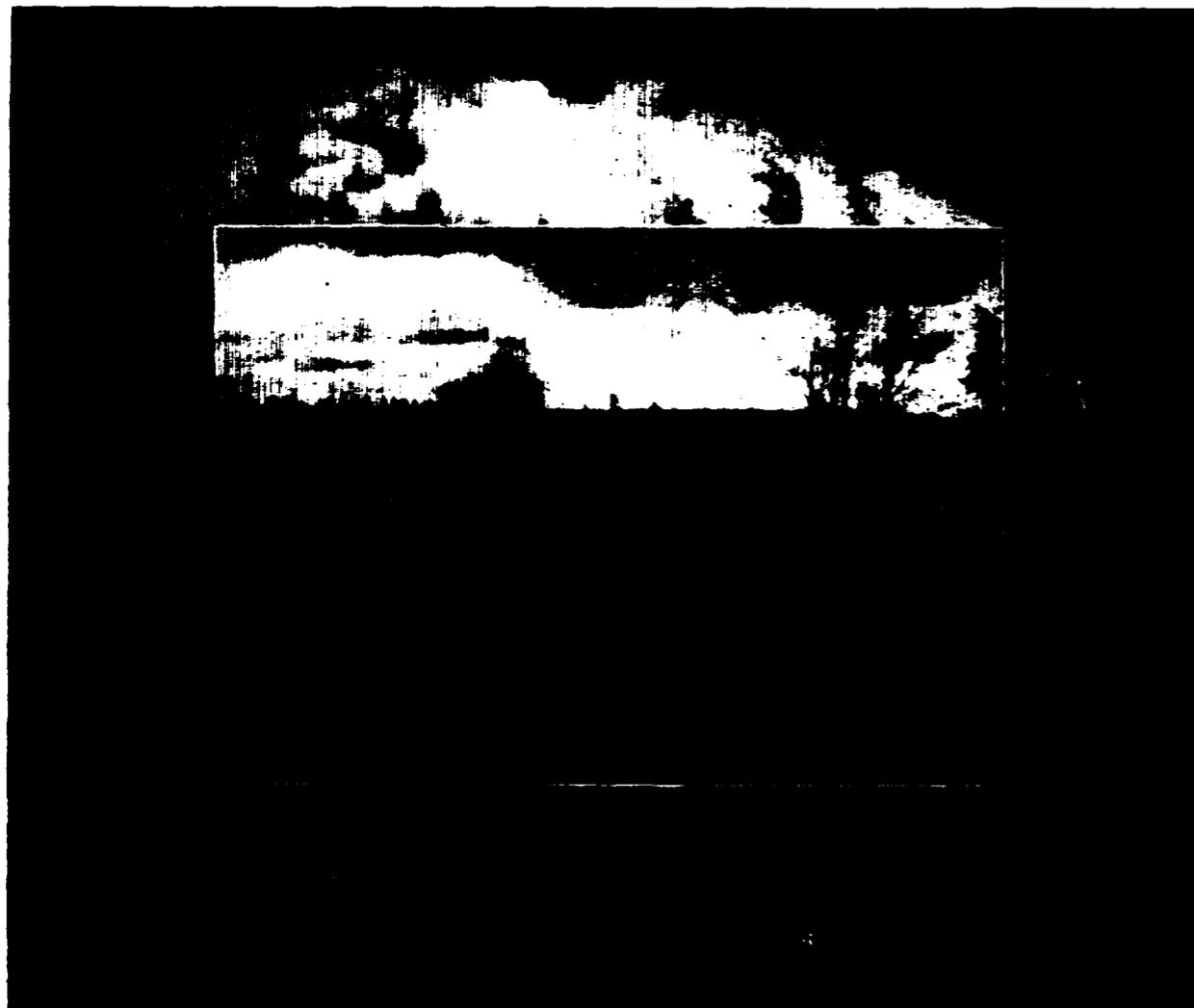
The history of modern armor is relatively brief. The deeds of the men and the units we honor today have written many pages of that history. *Valor walked hand-in-hand with the means to do the job.*

We of the Armored Center have a duty, as soldiers and citizens of the United States, to carry on the heritage of those whose service to our country made possible this Court of Honor. We shall fulfill that duty.

It is in all humility, and while seeking the blessing of the Almighty, that I dedicate this *Armor Court of Honor*.



Former members of the 3d Armored Division flank the Spearhead plaque, one of sixteen unveiled in the ceremony honoring the World War II armored divisions.



U.S. Army and Sovfoto

## The Red Army in Atomic War

by COLONEL LOUIS B. ELY

**I**t is well known among most military men that the tendency toward excessive reliance on atomic weapons is dangerous. Yet in some quarters there is still an exaggerated idea of their power on the battlefield. This deficiency in thinking will not be remedied until the general outlines of atomic land warfare in the present military situa-

tion are set forth clearly and realistically.

A considerable amount of information has been published concerning the tactical principles of atomic land warfare. Likewise well known are the strengths and characteristics of the military forces which may be expected to engage in this type of war, that is, the armies which would fight

for the decisive area of Western Europe in the event of Soviet attack. With very little imagination the two fields of knowledge can be combined to establish the general nature of the operations to be expected in that crucial theater. Each of the contestants has atomic weapons available for use in the land battle. Each type of army, Communist and Western, has charac-

teristics which are advantageous in atomic warfare and each has attributes which can be serious deficiencies in such warfare. Some of the Western dreamers ignore the credits on the Soviet side and conveniently overlook the handicaps of their own forces. In their reveries a bomb bursts above a mass of Communist troops, the troops die and the war is over. Realism is needed.

A number of aspects of the Eastern forces, Soviet and satellite, will cause material difficulty to an enemy who seeks to use atomic missiles against them. Consider first mobility, one of the primary means of nullifying the new weapon. The commander who has located a possible atomic target, only to have it move on before he can make his decision and launch his missile, is balked. And the Soviet Army has demonstrated, even with its ill-trained forces of World War II, that when pre-set plans can be prepared and enemy opposition is weak, it is capable of rapid movement on a large scale. And the potential opponent which the Red Army now faces is far weaker numerically than were the Germans on their Eastern front.

In another characteristic highly valuable for countering atomic missiles the Eastern forces are unquestionably excellent. They are known to have the ability to fortify rapidly. A force which digs in before the enemy determines it to be a fit object for atomic attack escapes much of the effect of the burst, and frequently must be crossed off as an atomic target. A third outstanding quality of the Soviet forces tending to foil the new weapon is their high standard of camouflage training. By thus baffling the enemy intelligence the Red forces will throw delays into the use of the weapon, and during these delays may move elsewhere or dig in.

Often the exaggerators of the efficacy of the atomic missile dwell upon its psychological effect. This factor is undoubtedly great, but it must not be supposed that the surviving Red troops in the vicinity of the burst are going to break and run away. Soviet officers are authorized to apply harsh punishments to Red soldiers on the battlefield, and Communist troops are permeated with secret police, a fact of which the Ivans are well aware.

---

*With U. S. troops dug in a bare two miles short of ground zero in the latest Nevada test, and atomic warhead firing of the 280mm artillery gun on the schedule, we are ever closer to tactical atomic warfare's realities. With this view from the friendly side, what may we deduce in a consideration of an atomic clash with our only logical opponent?*

---

But none of these Soviet capabilities in contending with atomic weapons compare with the major Red advantage, vast numbers of troops. The Communist forces can make manifold simultaneous attacks, some major and decisive, others merely initially powerful. The Western general will be faced with difficult decisions. If he misinterprets the feints he wastes his scarce missiles. If he misinterprets the decisive attacks his line may be breached before he can throw in his atomic shells or bombs. If he uses his missiles on all the attacks, even though with good fortune he stops them all, the Reds can bring up fresh divisions and repeat the assault. Suppose the Western weapons do cripple twenty or thirty Red divisions: the Soviet commander can draw upon some of the remaining three hundred or more to reconstitute his forces. Nor will all of the crippled divisions be permanently out of action by any means; a substantial proportion may be rebuilt by requisition on the many millions of trained Soviet reserves.

The advantages of the Communist forces in atomic warfare are thus seen to consist of their capability, under present circumstances, of moving

rapidly, their ability to fortify quickly and to camouflage well, their control of panic, and above all in their great numerical strength.

But the Red Army weaknesses against the atomic weapon are many and serious. They loom large in any estimate of the situation in the atomic warfare of today.

In spite of their ability to move rapidly when plans are pre-set, the Red Army's combat units are poorly organized and equipped for quick, unexpected movement. They lack the necessary personnel and trucks to pick up and move their numerous weapons promptly, nor is their communications equipment yet sufficient for this type of warfare. This ineptness in maneuver, which is highly disadvantageous in conventional war, is even more of a drawback in atomic battle. Delay in movement gives the Western commander more time to estimate the situation as to when and where to use his atomic weapons.

Another weakness of the Red Army in fluid, mobile warfare is the confusion caused by unforeseen situations. Its officers are accustomed to having their thinking done for them. There is great fear, on their part, of acting without orders. Between organic weakness in its combat units and lack of initiative in its leaders, substantial Red forces can at times be encircled by a strong opponent and perhaps compressed into a limited area and there blasted with atomic bursts. This use of the new weapon saves time and ammunition, and may permit the annihilation of the surrounded Red troops before their relief can be effected.

COLONEL LOUIS B. ELY, who served for some months as Chief of Technical Intelligence in G2, is author of the book *The Red Army Today* which will shortly be published in a revised edition to include a new chapter on the satellite armies. Col. Ely is now a member of the Secretariat of the State-Defense Military Information Control Committee.

The highly publicized weakness of the Red Army in massing troops for an assault on a fortified position is in some degree genuine. Many of the reasons for this unsound procedure are inherent in the Communist forces. In their armies a commander is held to immediate and rigid accountability for getting results. He tends to keep his troops concentrated for control purposes, particularly necessary in an army where communications equipment is somewhat scarce. Flexibility of Red fire power is poor, hence troops must be physically present in the immediate area of the assault in order to exert their massive fire power effectively.

It would, of course, be unsound to base estimates of the degree of concentration to be expected of Red troops in an attack, in the present situation in Europe, too closely on the assaults made by the Soviet forces in World War II. Mass was needed at that time to compensate for extreme deficiencies of training, and the need for concentration due to lack of communications equipment was more pronounced than it is now. Nevertheless, if confronted by at least moderately strong opposition the Soviet forces may reasonably be expected to concentrate on a scale of perhaps half that which was usual to them in World War II. Such an estimate would place a corps of three rifle divisions on a front of eight to

ten miles. Heavy atomic attack on such an assaulting corps, properly timed, in addition to inflicting many thousands of casualties, might change the situation from a Communist attack to a segment of temporary impotence in the Red line, presenting an excellent opportunity for a counteroffensive breakthrough.

On balance Red strength lies in the fact that they are not idea recipients of atomic blows, while their weakness involves a limitation in ability to deliver such blows. Presumably the Soviet forces have fewer atomic bombs available for battlefield use than do the NATO powers. Presumed lack of an atomic artillery piece, the advantages of which will be discussed later, is a significant disability. But whatever steps the Reds may take to remedy these weaknesses, one of their inherent command defects is certain to be detrimental to their use of atomic weapons: the Communist incapacity to delegate authority. It is only logical to expect that within their armies the decision to use this scarce weapon in a given situation will be made only by the most senior Red commanders. Such a system must inevitably result in delays in the allotment of atomic missiles to specific areas of the battlefield or on specific targets. During the time-lag, the Westerns can move, disperse or dig in.

Red Army weaknesses in atomic



Red Army weaknesses include the inability of commanders to act without orders, and conversely the tendency to retain power of decision on high command levels.

war are lack of mobility (except under pre-set plans with little opposition), ineptness in maneuver, inability of commanders to act without orders, necessity to concentrate in relatively dense formations for attack against serious opposition, presumed shortage of atomic missiles and lack of an atomic artillery piece, and the tendency to retain power of decision on high levels.

In comparison with the communist forces, the qualities of the armies of the NATO powers for waging atomic warfare are very high, and their disadvantages relatively few.

The primary element of their superiority over the Communists is one of long standing, the ability to attain dispersion while retaining combat efficiency. The West has continually sought means of avoiding the huge casualties which would otherwise be inflicted by the ever-increasing fire power of conventional weapons. This characteristic stands them in good stead as a point of departure in tactical doctrine for atomic war. Their methods of communication and control permit them to alternate quickly from the highly dispersed formations which prevent effective exploitation of atomic weapons by the enemy, to the closer concentration required for decisive action, and to re-disperse promptly as soon as the situation permits.

The Western capability of rapid movement and change of direction can alter the situation radically during the time the Red commander is taking the necessary steps to use his atomic weapon. Rapid movement onto the Red flanks or rear, or exploitation through a gap created by Western missiles throws a difficult problem onto the Communist commander. His enemy may strike him decisively before he can estimate the strength and location of the opposing main forces with sufficient certainty to employ his atomic missiles against them.

In addition to the advantages inherited from pre-atomic days, the Western land forces now entering the atomic era have promptly established another major superiority over the Communists by producing the atomic artillery piece.

Little reflection is required to become aware of the extreme value of this weapon. On the battlefield, when the Western ground commander de-

termines upon an atomic target or group of targets, he can strike immediately with his gun before the target disappears or digs in. He can integrate the gun's action with the rapid operation of his troops.

The accuracy of the gun is a tremendous asset, particularly at the decisive time when the opposing forces are closely engaged. The ground commander can strike all but the very foremost elements of the enemy without damage to his own troops. Accurate timing permits forewarning of his own front-line troops to enable them to take cover at the time of the burst.

A final major advantage of the gun is its independence of weather conditions or darkness. Without the gun (or an army-controlled guided missile) in his hands, the Western commander's atomic power could be largely cancelled by Communist forces operating during periods of poor visibility.

The atomic gun, of course, cannot be considered a long-time Western monopoly. The Soviets will surely make an atomic artillery piece, although it can be expected that their initial model will not match the American. And in technical artillery skill in controlling the fire of the piece, or a battery or battalion of atomic artillery, the Soviets will be unlikely to overtake the Westerners in the foreseeable future.

Another major advantage of the Western powers in atomic warfare is the superiority in numbers of atomic missiles which, by inference, they possess. In fast-moving situations, when the exact location of important enemy forces is particularly hard to determine, the Western commander may be able to risk the use of the new potent weapon when he is not completely certain that his proposed target is remunerative. Red reserves, moving to counter a fast action by a Western force, will be particularly difficult to estimate as to strength. The Western commander may subject such reserves to atomic attack merely to insure the success of the maneuver.

In the more stabilized situations the Western commander may have available sufficient missiles to support a breakthrough of a fortified position. The very difficulty of such a breakthrough being carried out quickly



The Soviets will surely make an atomic artillery piece, although it will not match the American gun, nor will the Reds equal our technical artillery skill.

creates a surprise situation—a condition which the Red Army is not adept in meeting.

One more important aspect of atomic war favorable to the Western cause is its defensive role. To whatever extent the NATO forces plan to carry out this mission by position defense, their fortifications will afford a considerable degree of protection against Soviet atomic attack, and if well manned will present the Red forces with the problem of concentrating their troops relatively heavily in the face of numerous atomic weapons.

The land forces of the West have few weaknesses in atomic warfare. Their supply ports would be difficult to operate if crippled by atomic attack, and the alternative of unloading across beaches is expensive in manpower.

But overshadowing this and all other deficiencies of the Western powers in the present situation is lack of troop strength. Due to this condition many of the Communist weaknesses in atomic warfare must remain unexploited. The sensitivity of Red forces to disruption during rapid movement signifies nothing unless their enemy has sufficient troops to accomplish the upset. Much less are large bodies of Communist troops likely to be surrounded and compressed into atomic targets, for this requires considerable numbers of highly competent troops. Even the

now-standard dream of great masses of Communist troops advancing elbow to elbow against Western defensive lines has little validity unless these lines are manned in sufficient strength to force the Red leaders to such an action.

Nor does the lack of troops merely lose for the Western commanders much of their ability to kill or capture large numbers of Communists or to disrupt a rapid advance of the Red forces. It tends in addition to make futile any consideration of exploiting decisively the positive measures which the West could otherwise engage in. Swift movements against the flanks or rear of Soviet troops, unless in force somewhat commensurate with the bodies of troops attacked, are merely harassing raids. As for pouring through a gap in the Communist lines created by profuse expenditure of Western atomic missiles, the few troops available to "pour" would merely be swallowed up.

In summary, the Red Army is ill adapted by its nature to wage atomic warfare, and the Western type of force is well qualified. But in Europe today, the new weapon is merely a palliative in the ground situation of the NATO powers, and the Communist forces cannot be made to feel its full brunt unless sufficient conventional type combat troops are present to exploit its great potentialities.

During and since World War II, the subject of soldier reaction in battle has had much attention. S. L. A. Marshall explored it in great and fascinating detail in his book *Men Against Fire*. Articles have appeared in many publications touching upon various aspects of the matter, a recent one in *Collier's* questioning why half our combat soldiers fail to fire their weapons in a fight.

In all of this the coverage has been in terms of the *infantryman*. That is all very well when the idea is the improvement of the foot soldier and foot units at all levels. But taken out of the infantry vacuum, it is in line with the prevalent tendency to consider the Army always in an infantry context—the infantryman, the rifleman, the foot soldier—and this is only one part of a whole of many parts.

Soldier reaction in battle is a key subject in a consideration of the composition of our forces. Army organization, doctrine, techniques, tactics, equipment, all must keep pace with technological change. The evolution in methods of warfare affects the balance of our forces, and changes must come at all levels of the Army structure if we are to keep pace with the times.

Thus it is an interesting thing, and a necessary thing as well, to look at the whole by considering not only how the foot soldier reacts on the battlefield, but the *mounted* soldier as well. A thesis might well be posed in a series of questions.

What does the tank do for the tanker on the battlefield? Among mounted soldiers, are there as many individual failures to act as with the rifleman? Does the tank, with its ability to move, its protection and its armament, its sense of power and crew companionship, instill a proportionately higher degree of combativeness in the individual soldier? What is the relation of aggressive-mindedness between the mounted and dismounted soldier?

What difference, if any, can be expected between the orthodox foot infantryman and the armored infantryman? What is the difference in reaction between the artilleryman serving an emplaced gun and one serving a self-propelled gun?

The army that comes up with the answers to these provocative questions, and applies the findings correctly to its organizational composition, will be well on the way to success on the battlefield.

From the individual soldier standpoint, there is little doubt that *horizon* has much to do with battlefield reaction and effectiveness.

Variations in foreground and horizon have marked effect upon individual and crew performance. There appears to be a degree of rapport within the crew of a tank or plane which plays a more decisive part than in the team operating in the open—the foot team.

The foot soldier's horizon is limited. His objective is in the foreground. More often than not, it is a hill, a ridge, a mountain—something above him, something which, quite apart from the consideration of enemy opposition, will require physical effort to reach. The foot soldier's thinking is conditioned to the next bound.

On the other hand, the mounted soldier's view reaches well forward, to and beyond the visible horizon. Physically he is higher off the ground. His overall role of mobile operations, reconnaissance, exploitation, pursuit, connotes distance, movement, advance! The mounted soldier's "psychological reach" thus becomes more appreciable than that of his comrade on the ground.

Operations Research Office has been carrying forward fatigue and stress duties in Korea, studies once again limited to the foot soldier area. However, sampling of tanker reaction in Korea might well fall short of averaging out by virtue of the infantry complex of that war and the fact that

Armor is not employed in its true and correct role. It is unfortunate that across-the-board samplings were not completed for World War II Armor personnel, to support a general finding that our armored divisions had a higher level of performance as a whole than did our infantry divisions as a whole. The reasons for this, however, were not officially deciphered; it may not be amiss to think that several points expressed in these pages contribute to the answer.

Despite the paucity of attention to mounted soldier reaction in combat, the subject is not an entirely new one. For example, as far back as 1922, the eminent British military analyst, Major General J. F. C. Fuller, wrote: "In the next war we may expect tactical organization to proceed . . . at an enormous speed, if muscle be replaced by petrol. . . . Weapons will become more and more powerful, protection more and more mobile, mobility more and more speedy, and morale, safeguarded by these three, more and more firm." Confirmation of a higher performance level by armored divisions over infantry divisions in World War II would tend to confirm General Fuller's farsighted analysis for his "next war."

The firmness drawn by the mounted soldier from his "mount" may be just such a psychological lift as that experienced by the average citizen in getting behind the wheel of a car, or in mounting a horse for a ride along a favorite trail. Training and discipline translate that added something into a positive factor on behalf of the individual and the team. When we see that "in any given action in World War II, only 12 to 25 per cent of all combat soldiers who were armed and in a position to fire their weapons at the enemy were able to pull the trigger," and that this figure has been upped to barely 50% on today's battlefield in Korea, there appears to be justification for a careful search

for additional military methods to trim the negative percentage even further. The mounted area may be a lucrative source.

It is difficult to consider this subject without bringing in the atomic warfare angle.

In the most recent test at our Nevada proving ground, foot troops were dug in a bare two miles from the blast. There was even some conjecture to the effect that these troops might well have been able to weather the thing by lying flat on the ground. We know that it takes time to dig in; it takes time for foot troops to assemble; it takes time before foot troops can safely move into a radiation zone; and it takes them time to move in.

Armor's protection is already wrapped around the mounted soldier against the possibility of an enemy atomic blast. Mobility allows wider dispersion against blast effects and closer proximity to the blast. Rapid concentration is possible immediately following a blast, and mounted troops should be able to roll through a radiation zone sooner than dismounted troops—all of which seems to signify, in a tactical sense, the ability to carry the fight to the enemy with heavy fire power and win a decision despite atomic action. Conversely, the points outlined in this paragraph apply to friendly use of the atomic instrument. Insofar as soldier reaction under these circumstances is concerned, may we not say that the mounted soldier goes onto the atomic battlefield with definite advantages over the dismounted man?

Much of this consideration of the matter of soldier reaction in battle is yet to be corroborated by official study. That it is a worthwhile area for a study is obvious. And, although there is some speculation in these paragraphs, the idea appears to be substantially sound. At least, it may be sound enough to draw one definite conclusion . . .

"Mounted" means a difference.

## A Milestone

With this issue of ARMOR, the 65th year of publication of the Magazine of Mobile Warfare gets under way.

It was in March of 1888, three years following the organization of the United States Cavalry Association, first of the ground arms organizations, that the *Cavalry Journal* commenced publication, first by some years of the ground arms journals.

An interesting transition has taken place in the life of the publication, a transition superimposed upon the thread of continuity identified in the magazine's subtitle—Mobile Warfare. Three names have carried the mounted organ through changing times and the evolution of warfare. Mobility's exponents have flexible minds.

The *Cavalry Journal* banner spanned the period 1888 through 1946, when, against a backdrop of mechanization in the mounted field, the name be-

came *Armored Cavalry Journal*. This was to last four years, until 1950 and the passage of the Army Organization Act, which made *Armor* a continuation of the Cavalry. Thus *ARMOR*.

Twenty-six editors (see next page and page 4) have held the editorial chair over the three score and five years of publication. Home was Fort Leavenworth until 1920, when the headquarters was moved to the Nation's Capital.

Frequency has varied through the years, from monthly to bi-monthly to quarterly, with two periods of suspension, one at the turn of the century as a result of the Spanish-American War, the other at the close of World War I.

The history of the Magazine of Mobile Warfare is one of long service to the mounted arm, the Army and the country. Operating on a firm base, its capacity for service is dedicated to the future.

## A Transition

This issue, which marks the 65th year of publication of this magazine, serves also to mark the departure of its 26th editor (see previous page and page 4). And since this is a combination office, it marks the departure of the Secretary-Treasurer.

Assignment to this post is unique in the Army. Service during this tour just completed has been unique as well. For this has been the period of consolidation in the evolution from horse to horsepower. This has been the interval that brought the significant name change. Businesswise it has been the moment to combat the postwar ebb.

In the general affairs, we have seen a long pull from 1800 up to more than 5800 paid copies of the magazine coursing out through the world postal system. We have seen Association membership multiply in proportion. We have seen the ordered copies per issue jump from 3,000 to 7,500. We

have seen a doubling of staff, a doubling of operating space, a doubling of rent; we have seen two increases in subscription rates, a strengthening of the Executive Council and a real annual meeting.

Our thanks and appreciation go out to the members of the staff who have carried forward the administrative details during our incumbency—circulation, bookkeeping, book department, shipping and file—details which may not have the glamor of the editorial end, but which nevertheless contribute to the finished product.

We extend sincere thanks to the distinguished members of the governing body for their accessibility and their invaluable guidance and counsel.

We extend to Editor Number 27 our sincere good wishes in his new post, with a guarantee of wholehearted support and assurance of an interesting tour of duty.

*Armor is an important cog in the machine of Western European defense. On these pages are pictured the commanding generals of six armored divisions contributing to the mobile defense of the West. The commanders of the U. S. 2d and French 5th, review armored division battlefield employment*

## Mobile Defense of Western Europe

by MAJOR GENERAL GEORGE W. READ, JR.

**T**WO important factors must be taken in mind when considering the defense of Western Europe. First, the Allied Powers will never attempt to match the air strength with expenditure here, and second, the Allies will not match all World War II in a corner out of aggression.

These factors indicate an emphasis on the mobile defense of Western Europe. The tank and over-land possibilities have, within these constraints, capability

to sever the element of our rear in striking the last blow, and this advantage will have Allied troops to assume a defensive role initially.

Today the defensive capabilities of the Allies are a far cry from that possessed in 1942. Then, when Soviet units in Europe were so clearly involved, the role of our forces in the West was to strike through the European theater. Today, through the expansion of our defenses in the U. S. Zone and similar other zones

The remarkable build-up of Allied Forces since 1948 has erased the Soviet capability; the golden opportunity for quick and easy Red Army victory has passed. The Soviets now know that the success of a westward attack is definitely a gamble.

Present Allied strength permits the positioning of troops so that the element of surprise can no longer be tactically effective. Our forces are constantly aware of the possibilities of a sneak attack and all units are alert and ready to take the field on a moment's notice.

If the Battle of Western Europe is ever joined, it must be recognized that Soviet forces will have initial air and ground superiority. The ground effort, with complete air cover and close air support, will be spearheaded by strong armored and mechanized formations drawing to task up with available air drops on critical terrain features. The weather will be propitious and the mobility good. In our favor, we have complete control of the terrain, our alert air force in ground of our own planning and our ready power for the air cover we will inflict the greatest possible losses. Our logistical support will be

ing attrition and an early breakthrough by powerful Soviet forces. The best solution is a highly mobile defense in considerable depth. In this type of warfare, mobility and maneuverability of the armored divisions and other armored formations can be

used to the greatest possible advantage in the vital and traditional role of keeping the battle fluid and destroying enemy armor.

The 2d Armored Division is prepared for such a role in support of the U. S. Seventh Army.

## For the Armored Division . . . New Battlefield Potential

by MAJOR GENERAL GEORGE W. READ, JR.

**T**he technical characteristics of our tanks have increased tank unit mobility and speed. With lighter ground protection armor, improved suspension systems, better air gear and improved maneuverability, the new Patton tanks can move a high speed over difficult terrain. The new "power" gear, when combined with and improved turret, with the

of the tank unit plan are emphasis on the problem of cooperation of units with their supporting units in heavy, medium and light armor. New equipment has not followed the rate of technical evolution in the tank.

The reconnaissance element is a vehicle that is less capable than any type of armor. The D-9, a tank, can no longer maneuver in the

will have to proceed on their own over areas suitable to maximum firing effect and inter-tank support. It is at the higher echelon of armored command that tank-infantry cooperation will be effected.

Divisional artillery with close-range equipment can no longer support tanks in a rapid advance, except by frequent changes of position, which is harmful to firing continuity and effectiveness.

The engineer, with present equipment, is no longer in a position to ensure the clearing of obstacles with sufficient speed for tank operations.

Logistical problems have been solved with the use of the new Patton. Storage of fuel and ammunition for tank units have increased. Units of fuel tankers must be prepared to penetrate the boundaries of armored divisions to be logistical units. This must be able to maintain the energy activities. Fuel units capable of movement should be made to supply the armor in night time advanced drops. Fueling for forward to Army.

The existing pattern of an armored division with its own armor units is a cooperation with other units

The highly publicized weakness of the Red Army in massing troops for an assault on a fortified position is in some degree genuine. Many of the reasons for this unsound procedure are inherent in the Communist forces. In their armies a commander is held to immediate and rigid accountability for getting results. He tends to keep his troops concentrated for control purposes, particularly necessary in an army where communications equipment is somewhat scarce. Flexibility of Red fire power is poor, hence troops must be physically present in the immediate area of the assault in order to exert their massive fire power effectively.

It would, of course, be unsound to base estimates of the degree of concentration to be expected of Red troops in an attack, in the present situation in Europe, too closely on the assaults made by the Soviet forces in World War II. Mass was needed at that time to compensate for extreme deficiencies of training, and the need for concentration due to lack of communications equipment was more pronounced than it is now. Nevertheless, if confronted by at least moderately strong opposition the Soviet forces may reasonably be expected to concentrate on a scale of perhaps half that which was usual to them in World War II. Such an estimate would place a corps of three rifle divisions on a front of eight to

ten miles. Heavy atomic attack on such an assaulting corps, properly timed, in addition to inflicting many thousands of casualties, might change the situation from a Communist attack to a segment of temporary impotence in the Red line, presenting an excellent opportunity for a counteroffensive breakthrough.

On balance Red strength lies in the fact that they are not idea recipients of atomic blows, while their weakness involves a limitation in ability to deliver such blows. Presumably the Soviet forces have fewer atomic bombs available for battlefield use than do the NATO powers. Presumed lack of an atomic artillery piece, the advantages of which will be discussed later, is a significant disability. But whatever steps the Reds may take to remedy these weaknesses, one of their inherent command defects is certain to be detrimental to their use of atomic weapons: the Communist incapacity to delegate authority. It is only logical to expect that within their armies the decision to use this scarce weapon in a given situation will be made only by the most senior Red commanders. Such a system must inevitably result in delays in the allotment of atomic missiles to specific areas of the battlefield or on specific targets. During the time-lag, the Westerns can move, disperse or dig in.

Red Army weaknesses in atomic

war are lack of mobility (except under pre-set plans with little opposition), ineptness in maneuver, inability of commanders to act without orders, necessity to concentrate in relatively dense formations for attack against serious opposition, presumed shortage of atomic missiles and lack of an atomic artillery piece, and the tendency to retain power of decision on high levels.

In comparison with the communist forces, the qualities of the armies of the NATO powers for waging atomic warfare are very high, and their disadvantages relatively few.

The primary element of their superiority over the Communists is one of long standing, the ability to attain dispersion while retaining combat efficiency. The West has continually sought means of avoiding the huge casualties which would otherwise be inflicted by the ever-increasing fire power of conventional weapons. This characteristic stands them in good stead as a point of departure in tactical doctrine for atomic war. Their methods of communication and control permit them to alternate quickly from the highly dispersed formations which prevent effective exploitation of atomic weapons by the enemy, to the closer concentration required for decisive action, and to re-disperse promptly as soon as the situation permits.

The Western capability of rapid movement and change of direction can alter the situation radically during the time the Red commander is taking the necessary steps to use his atomic weapon. Rapid movement onto the Red flanks or rear, or exploitation through a gap created by Western missiles throws a difficult problem onto the Communist commander. His enemy may strike him decisively before he can estimate the strength and location of the opposing main forces with sufficient certainty to employ his atomic missiles against them.

In addition to the advantages inherited from pre-atomic days, the Western land forces now entering the atomic era have promptly established another major superiority over the Communists by producing the atomic artillery piece.

Little reflection is required to become aware of the extreme value of this weapon. On the battlefield, when the Western ground commander de-

cides upon an atomic target or group of targets, he can strike immediately with his gun before the target disappears or digs in. He can integrate the gun's action with the rapid operation of his troops.

The accuracy of the gun is a tremendous asset, particularly at the decisive time when the opposing forces are closely engaged. The ground commander can strike all but the very foremost elements of the enemy without damage to his own troops. Accurate timing permits forewarning of his own front-line troops to enable them to take cover at the time of the burst.

A final major advantage of the gun is its independence of weather conditions or darkness. Without the gun (or an army-controlled guided missile) in his hands, the Western commander's atomic power could be largely cancelled by Communist forces operating during periods of poor visibility.

The atomic gun, of course, cannot be considered a long-time Western monopoly. The Soviets will surely make an atomic artillery piece, although it can be expected that their initial model will not match the American. And in technical artillery skill in controlling the fire of the piece, or a battery or battalion of atomic artillery, the Soviets will be unlikely to overtake the Westerners in the foreseeable future.

Another major advantage of the Western powers in atomic warfare is the superiority in numbers of atomic missiles which, by inference, they possess. In fast-moving situations, when the exact location of important enemy forces is particularly hard to determine, the Western commander may be able to risk the use of the new potent weapon when he is not completely certain that his proposed target is remunerative. Red reserves, moving to counter a fast action by a Western force, will be particularly difficult to estimate as to strength. The Western commander may subject such reserves to atomic attack merely to insure the success of the maneuver.

In the more stabilized situations the Western commander may have available sufficient missiles to support a breakthrough of a fortified position. The very difficulty of such a breakthrough being carried out quickly



The Soviets will surely make an atomic artillery piece, although it will not match the American gun, nor will the Reds equal our technical artillery skill.

creates a surprise situation—a condition which the Red Army is not adept in meeting.

One more important aspect of atomic war favorable to the Western cause is its defensive role. To whatever extent the NATO forces plan to carry out this mission by position defense, their fortifications will afford a considerable degree of protection against Soviet atomic attack, and if well manned will present the Red forces with the problem of concentrating their troops relatively heavily in the face of numerous atomic weapons.

The land forces of the West have few weaknesses in atomic warfare. Their supply ports would be difficult to operate if crippled by atomic attack, and the alternative of unloading across beaches is expensive in manpower.

But overshadowing this and all other deficiencies of the Western powers in the present situation is lack of troop strength. Due to this condition many of the Communist weaknesses in atomic warfare must remain unexploited. The sensitivity of Red forces to disruption during rapid movement signifies nothing unless their enemy has sufficient troops to accomplish the upset. Much less are large bodies of Communist troops likely to be surrounded and compressed into atomic targets, for this requires considerable numbers of highly competent troops. Even the

now-standard dream of great masses of Communist troops advancing elbow to elbow against Western defensive lines has little validity unless these lines are manned in sufficient strength to force the Red leaders to such an action.

Nor does the lack of troops merely lose for the Western commanders much of their ability to kill or capture large numbers of Communists or to disrupt a rapid advance of the Red forces. It tends in addition to make futile any consideration of exploiting decisively the positive measures which the West could otherwise engage in. Swift movements against the flanks or rear of Soviet troops, unless in force somewhat commensurate with the bodies of troops attacked, are merely harassing raids. As for pouring through a gap in the Communist lines created by profuse expenditure of Western atomic missiles, the few troops available to "pour" would merely be swallowed up.

In summary, the Red Army is ill adapted by its nature to wage atomic warfare, and the Western type of force is well qualified. But in Europe today, the new weapon is merely a palliative in the ground situation of the NATO powers, and the Communist forces cannot be made to feel its full brunt unless sufficient conventional type combat troops are present to exploit its great potentialities.



Red Army weaknesses include the inability of commanders to act without orders, and conversely the tendency to retain power of decision on high command levels.

During and since World War II, the subject of soldier reaction in battle has had much attention. S. L. A. Marshall explored it in great and fascinating detail in his book *Men Against Fire*. Articles have appeared in many publications touching upon various aspects of the matter, a recent one in *Collier's* questioning why half our combat soldiers fail to fire their weapons in a fight.

In all of this the coverage has been in terms of the infantryman. That is all very well when the idea is the improvement of the foot soldier and foot units at all levels. But taken out of the infantry vacuum, it is in line with the prevalent tendency to consider the Army always in an infantry context—the infantryman, the rifleman, the foot soldier—and this is only one part of a whole of many parts.

Soldier reaction in battle is a key subject in a consideration of the composition of our forces. Army organization, doctrine, techniques, tactics, equipment, all must keep pace with technological change. The evolution in methods of warfare affects the balance of our forces, and changes must come at all levels of the Army structure if we are to keep pace with the times.

Thus it is an interesting thing, and a necessary thing as well, to look at the whole by considering not only how the foot soldier reacts on the battlefield, but the mounted soldier as well. A thesis might well be posed in a series of questions.

What does the tank do for the tanker on the battlefield? Among mounted soldiers, are there as many individual failures to act as with the rifleman? Does the tank, with its ability to move, its protection and its armament, its sense of power and crew companionship, instill a proportionately higher degree of combativeness in the individual soldier? What is the relation of aggressive-mindedness between the mounted and dismounted soldier?

What difference, if any, can be expected between the orthodox foot infantryman and the armored infantryman? What is the difference in reaction between the artilleryman serving an emplaced gun and one serving a self-propelled gun?

The army that comes up with the answers to these provocative questions, and applies the findings correctly to its organizational composition, will be well on the way to success on the battlefield.

From the individual soldier standpoint, there is little doubt that *horizon* has much to do with battlefield reaction and effectiveness.

Variations in foreground and horizon have marked effect upon individual and crew performance. There appears to be a degree of rapport within the crew of a tank or plane which plays a more decisive part than in the team operating in the open—the foot team.

The foot soldier's horizon is limited. His objective is in the foreground. More often than not, it is a hill, a ridge, a mountain—something above him, something which, quite apart from the consideration of enemy opposition, will require physical effort to reach. The foot soldier's thinking is conditioned to the next bound.

On the other hand, the mounted soldier's view reaches well forward, to and beyond the visible horizon. Physically he is higher off the ground. His overall role of mobile operations, reconnaissance, exploitation, pursuit, connotes distance, movement, advance! The mounted soldier's "psychological reach" thus becomes more appreciable than that of his comrade on the ground.

Operations Research Office has been carrying forward fatigue and stress duties in Korea, studies once again limited to the foot soldier area. However, sampling of tanker reaction in Korea might well fall short of averaging out by virtue of the infantry complex of that war and the fact that

Armor is not employed in its true and correct role. It is unfortunate that across-the-board samplings were not completed for World War II Armor personnel, to support a general finding that our armored divisions had a higher level of performance as a whole than did our infantry divisions as a whole. The reasons for this, however, were not officially deciphered; it may not be amiss to think that several points expressed in these pages contribute to the answer.

Despite the paucity of attention to mounted soldier reaction in combat, the subject is not an entirely new one. For example, as far back as 1922, the eminent British military analyst, Major General J. F. C. Fuller, wrote: "In the next war we may expect tactical organization to proceed . . . at an enormous speed, if muscle be replaced by petrol. . . . Weapons will become more and more powerful, protection more and more mobile, mobility more and more speedy, and morale, safeguarded by these three, more and more firm." Confirmation of a higher performance level by armored divisions over infantry divisions in World War II would tend to confirm General Fuller's farsighted analysis for his "next war."

The firmness drawn by the mounted soldier from his "mount" may be just such a psychological lift as that experienced by the average citizen in getting behind the wheel of a car, or in mounting a horse for a ride along a favorite trail. Training and discipline translate that added something into a positive factor on behalf of the individual and the team. When we see that "in any given action in World War II, only 12 to 25 per cent of all combat soldiers who were armed and in a position to fire their weapons at the enemy were able to pull the trigger," and that this figure has been upped to barely 50% on today's battlefield in Korea, there appears to be justification for a careful search

for additional military methods to trim the negative percentage even further. The mounted area may be a lucrative source.

It is difficult to consider this subject without bringing in the atomic warfare angle.

In the most recent test at our Nevada proving ground, foot troops were dug in a bare two miles from the blast. There was even some conjecture to the effect that these troops might well have been able to weather the thing by lying flat on the ground. We know that it takes time to dig in; it takes time for foot troops to assemble; it takes time before foot troops can safely move into a radiation zone; and it takes them time to move in.

Armor's protection is already wrapped around the mounted soldier against the possibility of an enemy atomic blast. Mobility allows wider dispersion against blast effects and closer proximity to the blast. Rapid concentration is possible immediately following a blast, and mounted troops should be able to roll through a radiation zone sooner than dismounted troops—all of which seems to signify, in a tactical sense, the ability to carry the fight to the enemy with heavy fire power and win a decision despite atomic action. Conversely, the points outlined in this paragraph apply to friendly use of the atomic instrument. Insofar as soldier reaction under these circumstances is concerned, may we not say that the mounted soldier goes onto the atomic battlefield with definite advantages over the dismounted man?

Much of this consideration of the matter of soldier reaction in battle is yet to be corroborated by official study. That it is a worthwhile area for a study is obvious. And, although there is some speculation in these paragraphs, the idea appears to be substantially sound. At least, it may be sound enough to draw one definite conclusion . . .

"Mounted" means a difference.

## A Milestone

With this issue of ARMOR, the 65th year of publication of the Magazine of Mobile Warfare gets under way.

It was in March of 1888, three years following the organization of the United States Cavalry Association, first of the ground arms organizations, that the *Cavalry Journal* commenced publication, first by some years of the ground arms journals.

An interesting transition has taken place in the life of the publication, a transition superimposed upon the thread of continuity identified in the magazine's subtitle—Mobile Warfare. Three names have carried the mounted organ through changing times and the evolution of warfare. Mobility's exponents have flexible minds.

The *Cavalry Journal* banner spanned the period 1888 through 1946, when, against a backdrop of mechanization in the mounted field, the name be-

came *Armored Cavalry Journal*. This was to last four years, until 1950 and the passage of the Army Organization Act, which made *Armor* a continuation of the Cavalry. Thus *ARMOR*.

Twenty-six editors (see next page and page 4) have held the editorial chair over the three score and five years of publication. Home was Fort Leavenworth until 1920, when the headquarters was moved to the Nation's Capital.

Frequency has varied through the years, from monthly to bi-monthly to quarterly, with two periods of suspension, one at the turn of the century as a result of the Spanish-American War, the other at the close of World War I.

The history of the Magazine of Mobile Warfare is one of long service to the mounted arm, the Army and the country. Operating on a firm base, its capacity for service is dedicated to the future.

## A Transition

This issue, which marks the 65th year of publication of this magazine, serves also to mark the departure of its 26th editor (see previous page and page 4). And since this is a combination office, it marks the departure of the Secretary-Treasurer.

Assignment to this post is unique in the Army. Service during this tour just completed has been unique as well. For this has been the period of consolidation in the evolution from horse to horsepower. This has been the interval that brought the significant name change. Businesswise it has been the moment to combat the postwar ebb.

In the general affairs, we have seen a long pull from 1800 up to more than 5000 paid copies of the magazine coursing out through the world postal system. We have seen Association membership multiply in proportion. We have seen the ordered copies per issue jump from 3,000 to 7,500. We

have seen a doubling of staff, a doubling of operating space, a doubling of rent; we have seen two increases in subscription rates, a strengthening of the Executive Council and a real annual meeting.

Our thanks and appreciation go out to the members of the staff who have carried forward the administrative details during our incumbency—circulation, bookkeeping, book department, shipping and file—details which may not have the glamor of the editorial end, but which nevertheless contribute to the finished product.

We extend sincere thanks to the distinguished members of the governing body for their accountability and their invaluable guidance and counsel.

We extend to Editor Number 27 our sincere good wishes in his new post, with a guarantee of wholehearted support and assurance of an interesting tour of duty.

*Armor is an important cog in the machine of Western European defense. On these pages are pictured the commanding generals of six armored divisions contributing to the mobile defense of the West. The commanders of the U. S. 2d and French 5th, review armored division battlefield employment*

## Mobile Defense of Western Europe

by MAJOR GENERAL GEORGE W. READ, JR.

**T**WO important factors must be borne in mind when considering the defense of Western Europe. First, the Allied Powers will never attempt to match Soviet troop strength with equivalent forces, and second, the Allies will not touch off World War III by a covert act of aggression.

Since Soviet intentions are unknown, an attack on Western Europe is a stark and ever-present possibility. Thus, within their economic capabilities, the free nations must maintain strong forces on a stand-by basis. These forces cannot now prevent an aggressive move from the East but they are in a position to inflict severe punishment while reserves are speedily mobilized to cope with the attack.

It is a foregone conclusion that the

Soviets will enjoy the element of surprise in striking the first blow, and this advantage will force Allied troops to assume a defensive role initially.

Today the defensive capabilities of the Allies are a far cry from their potential in 1948. Then, when Soviet aims in Europe were so clearly unveiled, the role of our forces in Germany was swiftly changed from occupation to defense. Even though the equivalent of two divisions in the U. S. Zone and similar token forces in the British and French Zones were highly trained and resolute in their determination to fight and give a good account of themselves, it was obvious that they were no match for the overwhelming strength of the Red Armies poised to run roughshod over the European Continent.

The remarkable build-up of Allied Forces since 1948 has erased the Soviet capability; the golden opportunity for quick and easy Red Army victory has passed. The Soviets now know that the success of a westward attack is definitely a gamble.

Present Allied strength permits the positioning of troops so that the element of surprise can no longer be tactically effective. Our forces are constantly aware of the possibilities of a sneak attack and all units are alert and ready to take the field on a moment's notice.

If the Battle of Western Europe is ever joined, it must be recognized that Soviet forces will have initial air and ground superiority. The ground effort, with complete air cover and close air support, will be spearheaded by strong armored and mechanized formations thrusting to link up with sizeable air drops on critical terrain features. The weather will be propitious and the trafficability good. In our favor, we have intimate knowledge of the terrain, can elect to fight on ground of our own choosing, and can trade space for the time necessary to inflict the greatest possible losses. Our logistical support will be simple by comparison.

The problem, then, is how to conduct the initial defensive phase of this battle. If the Allies fall back quickly under the protection of light covering forces and attempt a sustained static and linear defense along likely terrain barriers, they are invit-

ing attrition and an early breakthrough by powerful Soviet forces. The best solution is a highly mobile defense in considerable depth. In this type of warfare, mobility and maneuverability of the armored divisions and other armored formations can be

used to the greatest possible advantage in the vital and traditional role of keeping the battle fluid and destroying enemy armor.

The 2d Armored Division is prepared for such a role in support of the U. S. Seventh Army.

## For the Armored Division . . . New Battlefield Potential

by BRIGADIER GENERAL ROBERT LOTH

**T**HE technical characteristics of new tanks have increased tank unit mobility and shock. With lighter ground pressure, better suspension system, better engines and increased maneuverability, the new Patton tanks can move at high speed over difficult terrain. The more powerful gun, better ammunition and improved turrets, with the latest in fire control systems, allow the tank unit today to effectively engage enemy tanks at greater range and over a wider area.

Division tank units are a formidable force on the battlefield when handled by well-trained personnel.

The increase in tactical potential

of the tank unit places new emphasis on the problem of cooperation of tanks with their supporting arms—infantry, artillery and engineers—whose equipment has not followed the same technical evolution as the tank.

The infantryman, mounted in a vehicle that is less operable over any type of terrain, and not so fast as the tank, can no longer maneuver at the speed of armor: armor loses the benefits of its speed when it is held to the pace of the slower elements of the tank-infantry team. The combining of tanks and infantry at small-unit levels, therefore, no longer seems to be practicable except in particular instances; more and more the tank units

will have to proceed on their own over areas suitable to maximum firing effect and inter-tank support. It is at the higher echelon of armored command that tank-infantry cooperation will be effected.

Divisional artillery with short-range equipment can no longer support tanks in a rapid advance, except by frequent changes of position, which is harmful to firing continuity and effectiveness.

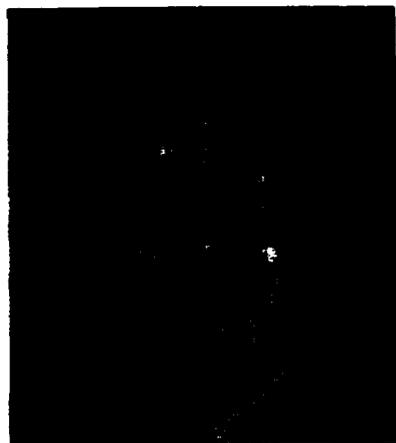
The engineers, with present equipment, are no longer in a position to insure the clearing of obstacles with sufficient speed for tank operations.

Logistical problems have been created with the use of the new Pattons; tonnages of fuel and ammunition for tank units have increased. Every effort, however, must be pointed to preventing the burdening of armored division units by logistical details. They must be left free to maintain their strategic mobility. Fully mobile supply units, capable of cross-country operation, should be ready to supply the armor at night from advanced depots pushed far forward by Army.

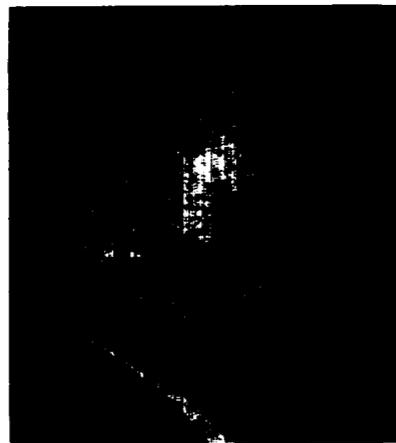
The striking power of an armored division will be utilized only insofar as its cooperation with other arms does not restrict its tactical mobility, and logistical requirements do not diminish its strategic mobility.

Our armored units must be allowed to accomplish their maximum performance through the basic principle that applies to the arm-mass employment.

### NATO ARMORED DIVISION COMMANDERS



Maj. Gen. George W. Read, Jr.  
CG, 2d U.S. Armored Division



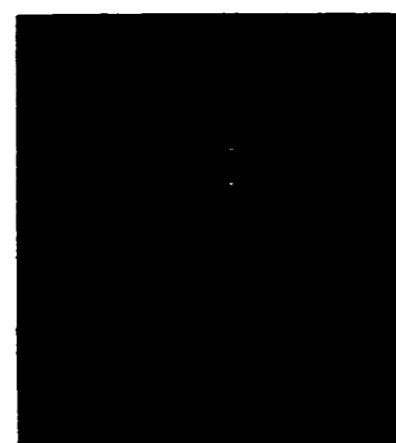
Brig. Gen. Robert Loth  
CG, 5th French Armored Division



Maj. Gen. George E. Prier-Palmer  
CG, 6th British Armored Division



Maj. Gen. Charles F. Jones  
CG, 7th British Armored Division



Maj. Gen. H. R. B. Feste  
CG, 11th British Armored Division



Maj. Gen. L. J. V. L. Gynels  
CG, 10th Belgian Armored Division

# 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.

Amphibious operations are almost inescapably a part of modern warfare. The smallest war today involves the three dimensions—land, sea and air. History records the effects of amphibious operations on the course of empire. What might have been the shape of things had the Spaniards or Napoleon or Hitler carried out their plans for the invasion of England? This type of operation had its widest use in the greatest world conflict—World War II—when, for example, the United States Army executed forty-nine successful combat amphibious actions in the Mediterranean, Atlantic and Southwest Pacific areas. As recently as the Korean campaign our forces executed a successful amphibious end run around an enemy flank—an operation that has great merit over a frontal assault against a strongly fortified line such as now exists across that battered Peninsula. Against this background, ARMOR turns to one of the U. S. Army's two armored amphibious battalions for an appraisal of special techniques. The battalion and company commanders of the 747th Amphibious Tank and Tractor Battalion, Fort Ord, Calif., speak out on a highly significant subject.—EDITOR.

The writer of the following made the initial World War II landings at Guadalcanal with the Americal Division, later serving as tactics instructor at the Cavalry School and on the staff of U. S. Air Forces Mid Pacific. A former commander of the 43d Cavalry Reconnaissance Squadron and a graduate of the Armored School and the Marine Corps Amphibious School, he has been commander of the 747th Amphibious Tank and Tractor Battalion for the past nine months.

Since its call to duty from Reserve status in Florida, the 747th Amphibious Tank and Tractor Battalion has been successively stationed at Fort Worden, Washington, Camp Cooke, California, and its present location, Fort Ord, California. A general reserve unit, the battalion is the only one of its type in the States, and is one of only two in the United States Army, the other being the 56th, now serving in Japan.

Call of this battalion into active service was a peacetime economy and training measure, designed to provide a headquarters for the training of amphibious tank and tractor companies and individuals as a nucleus for expansion should a mobilization requirement arise.

Normally the tank companies (four per battalion), and the tractor companies (two per battalion) are organized as separate battalions. Thus two tractor battalions and one tank battalion are sufficient to support one

infantry division (with two assault RCTs) in an amphibious landing. These amphibious units are Army or Corps troops, attached according to operational requirements.

Our tracked equipment [LVT IV and V (A)] are the obsolete World War II vehicles, outgunned, slower, less maneuverable, less sturdy in land operations, and with less protection than the new C-3 and C-6 LVTs used by our Marine Corps units. Nevertheless, the general principles of employment remain the same, and with a little imagination, a recomputation for time and space factors, a lower availability of vehicles due to heavy maintenance requirements, and consideration of the fragility of the old veterans in land operations, the training mission can be accomplished.

In the following discussion, bear in mind that the considerations are based on units equipped with the new type vehicles and not the World War II equipment presently in use.

A review of the capabilities of atomic weapons in amphibious warfare indicates that our tactical choice is dispersion or obliteration. Against an enemy with atomic capabilities, the need for self-sufficient dispersed amphibious landings and rapid movement inland to key objectives in a joint effort to seize the assigned beachhead is apparent. What better unit for this mission than the Amphibs? Loaded with assault infantry troops, protected from atomic effects by dispersion and the covered hatches for minimum losses, these Amphib

units will provide transportation to the landing area, invasion of the beaches, mobility, shock and fire power while on land, and resupply from ship to inland areas with no transfer or delay for reloading, and no reorganization of troops or supplies. Floating dumps for critical items such as ammunition, fuel and water will be provided by preloaded LVTs without the exposure of ships and their cargoes to hostile fire; and last but not least, there is a rapid means of medical evacuation during the initial stages of the landings prior to establishment of medical facilities on shore. Thus you have in the Amphibs a water-borne and land operating fighting team that is the amphibious counterpart to the armored division's combat commands.

Aside from futuristic, atomic, or pushbutton warfare, reflect now upon the value of these units in river crossing operations. A successful river crossing requires deception of crossing sites to be used, rapid crossing, early build-up of "bridgehead," and rapid breakout to exploit the crossing. With Amphibs all of these desired factors can be met. The necessity of boating assembly areas is eliminated; the assault units move direct from assembly areas or assault positions and are committed to crossings still fresh; protection and fire power are provided during the crossings; the crossings are rapid; and surprise is achieved. The assault units take with them tank-infantry teams (Amphib tanks and tractors with infantry), ar-

tillery support (Amphib tanks) and supply and evacuation means without the need of bridges or transfer points from land vehicle to boats, or vice versa—another example of how these Amphibs can be used to form combined arms teams to operate on water and land alike for rapid crossing of a water obstacle and initial seizure of a "bridgehead" objective.

In addition to their amphibious role the Amphibs provide an excellent supplementary force for protection of airfields and rear area installations and for anti-airborne defense. In these units you have mobility (relatively the same as with the tank), fire power (five machine guns on each tractor) and adequate communications (comparable to land tank units)—a made-to-order mobile unit that may be supplemented with infantry and can relieve combat troops such as infantry and tanks for the main mission. To effect a feint or ruse to simulate the movement of armored units, the general organization, noise of movement, and radio net of these Amphibs provide a commander with an excellent organization to deceive the enemy without the loss of actual armored units to effect the ruse. These are just a few of the effective additional missions that may be assigned the Amphibs.

A discussion of Amphibs would be incomplete without a few thoughts given to the task of "staffing" one of these units through an amphibious operation. In order to completely coordinate an operation, directives from the landing troops' commander and amphibious forces' commander, each assault unit commander's requirements, and shore party commanders' desires, and certain logistic and communications requirements, must be digested and turned out as readable, simple instructions to your troops. Detail upon detail must be rehearsed until perfect. Complete operational and logistic planning and execution come only with actual combined rehearsal and maneuvers. This requires a stability in staff assignments with close teamwork between the S2, S3, Comm 0 and S4. They must be able to plan concurrently as a preliminary to effective execution.

To support this integrated planning with an effective communications system is a commander's pet peeve and a communications officer's

nightmare! Everyone wants to get in the act! The following are a few essential nets that must be manned: LVT Net, Tactical Command Net, Shore Party Net, Tank-Infantry Net, Artillery Net, Air-Ground Net, LST Net, Naval Gunfire Net. To maintain this system each and every radio operator must be disciplined and trained to a fine edge. Each tank and tractor commander must be trained in radio procedure, and familiar with all the nets and call signs in order to tie in with the unit he is supporting. Each individual vehicle has an "encyclopedia" of directories and call signs connecting it with all agencies in the landing force. Here radio discipline must be monitored closely, and only long hours of training will accomplish the desired result of

All Photos U.S. Army



Lt. Col. Pitts

"transmit only when it is an absolute necessity."

This is only a brief discussion of the capabilities, use, and problems of an Amphib unit. This armored team, trained as tankers, endowed with the intuition of the oceanographer, skilled in the ways of the small boat sailor, and indoctrinated with the combat soldier's will to win, will bear the brunt of the initial amphibious landing, breach the beaches, carry the assault troops to their assault positions, and push inland to support the troops to the objective.

True to the spirit of the Amphibs, regardless of mission or odds—"We Break Through."

Lt. Col. GEORGE T. PITTS, JR.

The writer of the following entered the Army in 1949 as a second lieutenant and immediately attended the Armored School. Upon graduation he was assigned to EUCOM and served in Constabulary Headquarters, later Seventh Army, as an Intelligence officer. He has commanded Headquarters and Service Company of the 747th Amphibious Tank and Tractor Battalion since June of 1952.

The Headquarters and Service Company of an Amphibious Tank and Tractor Battalion is organized similar to that of the Tractor Battalion under TO&E 17-126.

Being the service unit for the battalion our mission isn't as glamorous as that of our sister line companies. However, that doesn't mean that our job is not important. It is a most essential one. The measure of success enjoyed by the combat companies of the battalion will be in direct ratio to the efficiency with which the Headquarters Company carries out its administrative support role.

As a separate battalion we have our own personnel section, staffed by officers and men of Headquarters Company. As in all Headquarters Companies the battalion staff is an integral part of our company. The nature of amphibious operations is such that staff planning problems are much more complex than is usually the case in a strictly ground operation. To work out all of the minute details of a prospective amphibious operation takes weeks and sometimes months.

An amphibious operation of any magnitude will involve elements of at least the Army and Navy, and probably the Air Force. Staff coordination between services must be initiated and maintained. Liaison, mutual confidence, and good will are essential factors to be preserved.

An objective having been selected, the Intelligence Officer must consider not only whether the terrain is adaptable to land force operations, but whether naval forces can navigate with safety in the adjacent waters. Beach, tide, and weather factors must be evaluated.

Personnel of the Operations Section must work out detailed split-second time schedules for coordination of fire support of naval, air, and army weapons. These weapons range

from sixteen inch naval rifles through bombs, mines, and rockets, to machine gun and rifle fire. Movements of personnel must coincide with these fire schedules. Timing is vital and safety margins are small in order that full advantage may be made of surprise and shock.

An enormous amount of a great variety of supplies is mandatory in combat. Exigencies of transportation and stowage necessitate curtailment, of course. It is the amphibious Supply Officer's problem to determine what items, including proportion, must be squeezed into the limited ship cargo space allotted. Then he must determine a manner of stowage that will insure quick and orderly unloading or transshipment at preset time schedules. It will be useless to have cases of blood plasma or ammunition if they are not accessible when the need for them arises.

It should be readily discernible that interstaff coordination is as vital a factor as the coordination between the staffs of the services involved.

In combat, the communication network is very complex. The Communication Section must plan and establish a great number and variety of both radio and wire nets. The tank companies must be tied in with the infantry, artillery, and tank units whose vanguard they are, and with the beach perimeter defense system. Meanwhile, the tractor companies must be netted with Navy forces afloat and Army-Navy shore party groups on the beach. Battalion Headquarters must be netted in with the tractor companies somewhere to the rear, and with the tank companies committed in support of the advancing infantry. In addition Battalion Headquarters must be provided with communication with the senior command of the land and water forces.

Vehicular maintenance, always a critical factor in a tank unit, is no less so in an Amphibious Armored Battalion. The corrosive action of the salt water adds to the normal repair burden borne by the battalion maintenance officer and his crew. In addition to the maintenance section in each company, there is a Battalion Maintenance Section of one officer and forty-one men in Headquarters Company to furnish major repair and maintenance support.

Like its land tank counterparts, the



Lt. Spirup

Headquarters and Service elements of an Amphibious Tank and Tractor Battalion must be mobile. In order that all staff sections may keep abreast with action on shore or in the offshore shipping lanes, Headquarters Company is provided with eleven LVTs for the transportation of their personnel and equipment from ship to shore and overland as necessitated by the situation.

Although operating in a different medium and employing different equipment the mission of Headquarters Company of the Amphibious Battalion is similar in principle to that of its land battalion counterpart. That is to provide the housekeeping and logistical support as needed to enable Battalion Headquarters and the line companies to successfully carry out their missions.

1ST. LT. JONES G. SPIRUP



Capt. Hunt

*The writer of the following entered military service in 1937. During World War II he served with the 2nd and 3rd Engineer Boat & Shore Regiments participating in landings at New Guinea, the Southern Philippines and Luzon. Upon return to active duty in December 1948 he was assigned to the 5th Cavalry Regiment and the Amphibious Training Center in the Far East, participating in small boat operations in Korea. He assumed command of Company A, 747th Amphibious Tank and Tractor Battalion, in January 1952.*

In an amphibious operation against a hostile beach, primary consideration, after determining the size and composition of the landing force, must be given to supporting arms during the initial stage of the landing. Armor is a definite asset to a landing force and a requirement to insure the success of the operation especially if the beach area is contested. On many beaches land tanks cannot be provided with the landing force because of the limitations imposed on transportation facilities by the characteristics of the beach, beach approaches and enemy defenses. When such is the case the one available supporting arm which can overcome the obstacles of transportation and still provide many of the supporting roles of the land tank is the Amphibious Tank Company.

The preparations for the use of amphibious tanks in support of a landing force are long and involved. All possible data on hydrographic conditions must be made available. To assist in the identification of the beach zone an oblique photograph of the beach should be provided. The importance of the oblique photograph should not be minimized. Moving along a medium as obscure as water, where there are no stable identifying landmarks or tracks to guide on, a preview of the beach facilitates control and direction. It must be remembered that the amphibious tanker is the first ashore and if he lands on the wrong beach the whole operation may be affected.

During the approach phase of the landing the amphibious tank company, preceding the landing force into the beach, is charged with the responsibility of delivering covering

ARMOR—March-April, 1953

fire along the landing zone and neutralizing beach defenses which were not destroyed by the pre-landing naval bombardment. To facilitate the accomplishment of these tasks a gyro-stabilized mount is provided for the 75mm howitzer which is the main gun of the amphibious tank.

The method of deployment along the beach is often determined by the character of the beach itself and the particular defense employed by the enemy. Sandy beaches normally have an acute rise immediately following the surf line. With this type of beach it is more advantageous to stop at the water's edge to utilize the defilade afforded by the sand. Since the hull of the LVT(A) has only ¼ inch armor protection every means available must be taken to cover the vehicle from heavy machine-gun fire and high-explosive missiles. From this defiladed position the automatic weapons and the main gun of the amphibious tank can be employed to destroy or neutralize enemy defenses in the immediate vicinity of the beach while the infantry is landing and reorganizing.

When the infantry assault waves have landed and reorganized the move inland from the water's edge is made as a tank-infantry team.

Control in an amphibious tank unit during a landing goes through three phases: (1) Strict, (2) Relaxed to nil, (3) Partial. The movement from the carriers, i.e., LSTs or LSDs, to the line of departure and then to the surf zone requires strict control. This movement must conform to a definite time schedule and a definite formation must be adhered to in order to insure a maximum effect in fire distribution along the beach. Immediately upon entering the surf zone control of the unit is relaxed. Each tank commander must overcome the action of the surf in the vicinity of his own tank and he must solve the problems imposed by the beach or obstacles in his own area. While in the surf zone the LVT cannot deliver effective fire on the beach because the vehicle is twisting and turning according to the wave action around it; therefore passage through the surf must be made in the fastest possible time. Inland from the beach control becomes partial. Here the tank unit commander finds that the assault units are fighting in all direc-

ARMOR—March-April, 1953

tions and the amphibious tanks are attempting to lend some support to each and every unit.

The peculiarities of the amphibious tank unit in actual operation demand that the training of the unit stress team play in addition to individual training. Each individual of an amphibious tank unit must be trained to accomplish any and all of the missions of the unit and must be flexible in thought and action.

CAPTAIN ALLEN D. HUNT

♦ ♦ ♦

*The writer of the following served in the Pacific during World War II with the 715th Amphibious Tractor Battalion. Prior to his present assignment he served in Korea with the G2 Section of the 24th Infantry Division and later with the G3 Section of Eighth Army Headquarters. In July 1951 he joined the 747th Amphibious Tank and Tractor Battalion, assuming command of B Company.*

An Amphibious tanker is a peculiar individual. His work requirements include the ability to perform many of the duties of the Tanker, Artilleryman, Infantryman, Engineer Shore Party and the Navy Small Boat Operator. His survival requires that, in addition to his regular training, he develop the skills of the hobo, the surf-fisherman and the beachcomber. Finally, and most important of all, he must become very intimate with that most fickle of all sirens, the surf. He is capable of speaking to the Navy on equal terms and he can talk shop



Capt. Vitello

with all other branches of the Army and Marine Corps.

Once committed his missions are many and varied. He may one day be operating as the flank guard of a division beachhead and the next be on an amphibious end-run around the enemy's flank. He may operate as a tanker in an assault on an enemy position, then suddenly revert to the control of the Artillery with the mission of providing additional artillery support for a friendly advance. He may find himself being used by the Shore Party to assist in the recovery of a breached landing craft or he may be part of a dismounted demolition patrol, operating close on the heels of the advancing infantry, with the mission of closing by-passed caves and bunkers. He may be carrying supplies to troops located in areas inaccessible to other vehicles because of swamps, unbridged rivers and rough terrain or he may find himself evacuating fresh casualties from a heavily contested beach out to Naval hospital ships. It is not unusual during an amphibious operation for him to hear the same phrase repeated over and over again, "Get a few Amphibs to do the job."

His training, if properly conducted, qualifies him for all of the jobs he may be called upon to perform; and his vehicle, if properly maintained and handled, is just the device needed to insure success.

Yet, despite his potentialities, there are definite limitations to his capabilities. Although he can perform the missions of the tanker, artilleryman and infantryman, each mission must be granted with some reservation. As a tanker he is definitely limited by his lack of adequate armor. With only 1 inch of armor protection around the turret and ¼ inch on the hull heavy-caliber machine guns and small mortars can neutralize him. In view of the lightness of his armor he can better perform the mission of the assault gun or SP gun. (This is not so with the new amphibious vehicle.) As an artilleryman he is limited by the small size of his main gun which is a 75mm howitzer. In addition to a heavy-grooved track which cuts a deep furrow and is difficult to camouflage, he also has a 10 foot high silhouette which is difficult to conceal. (The new amphibious vehicle has a 105 how, and the same track as the

35

land tank with paddles on the inner surface.) As an infantryman he is limited by the lack of adequate infantry-type individual weapons. His small arms consist of pistols, M3 sub-machine guns and some carbines.

When operating in water his vehicle loses maneuverability when required to move at slow speeds. In addition he has no braking-power when maneuvering in water. When operating on land his vehicle has exceptionally rough riding characteristics which considerably cut down his speed. The ground contact area of his track is so small it results in a ride similar to that of a hobbyhorse. Yet in spite of these limitations his vehicle can still negotiate obstacles both on land and water which would normally stop any other vehicle presently in use.

The one great factor that the amphibious tanker adds to other units assigned to an amphibious operation is that he acts as a morale booster. Some confusion exists on a hostile beach when the infantry landing force comes ashore. Landing from different boats they must reorganize to form the efficient fighting team they must be to successfully take and

hold the beachhead. When this landing takes place in the face of the enemy defenders many casualties occur and the confusion of reorganization is increased. But when the landing force is preceded by amphibious tankers, the infantry have an opportunity to reorganize behind a wall of friendly armor. Since the amphibious tanks are forward of the landing force laying down a heavy screen of automatic and high-explosive fire the few remaining beach defenders have little opportunity to disrupt the efficient reorganization of the infantry.

The amphibious tanker is proud of the role he is capable of playing in an operation. When properly trained and employed, but with due consideration given to his vehicular limitations, he knows he can contribute much to the success of any amphibious operation.

CAPTAIN ORLANDO E. VITULLO

◆ ◆ ◆

*The writer of the following served in the Pacific with the 32nd and 41st Infantry Divisions and in the ETO*

*with the Assembly Area Command during World War II. Prior to his present assignment he served in Korea with the Tank Company, 31st Infantry Regiment. He joined the 747th Amphibious Tank and Tractor Battalion and assumed command of C Company in April 1952.*

Ballast your tractor . . . boat paddles . . . bilge pump . . . inner transport area . . . wave guide boats . . . time interval between breakers—these are only a few of the strange and unfamiliar terms a land tanker will encounter upon joining an Amphibious Tank and Tractor Battalion.

The tractor companies of such a battalion can be compared to truck companies which have been given a combat mission in addition to normal duties. Landing troops and supplies in the face of enemy fire on a hostile shore is one of the many missions of a tractor company. This involves continuous and rapid movement from the inner transport area of assault troops and supplies through the surf zone and onto the beach.

When the landing has been accomplished the tractor company will, if hydrographic conditions indicate,

participate in a transfer line operation. In this type operation, the tractors will return from the beach to the transfer line and load troops transported there by the propeller-driven landing craft. Normally a transfer line operation is indicated if there is an offshore reef or sandbar which will prove to be an obstacle to the small boats used in transporting the later waves ashore.

At the completion of the transfer line operation the control of the tractor company passes from the battalion headquarters to the shore party commander. Another mission comes into view, as the tractors are then used in the resupply phase to haul cargo. However, holding and defending the captured beach area lies in the zone of responsibility of the tractor company.

In the early stages of the beachhead defense phase the tractor company is normally alone since the amphibious tank companies are engaged in their role of supporting artillery for the infantry. Upon completion of their artillery role the tank companies will rejoin the tractor companies and both will return to battalion control.

Let us now look at the vehicles the



Capt. Kunz

tractor company uses to accomplish its mission. The company, full strength, is authorized 51 LVT MK IV's or at reduced strength 20 LVT MK IV's. This vehicle is full tracked and will carry cargo or troops on land or water. A crew of 3 mans the vehicle and its normal armament is three .30 caliber and two .50 caliber machine guns. The tractor has no basic armor; however, portable armor is available and may be attached if required for an

operation. This armor, if used, will reduce considerably the cargo weight capacity of the tractor.

Since this is an amphibious vehicle and is so balanced that with a full load it will ride level in the water some consideration had to be given to its seaworthiness without cargo. This has been alleviated by the installation of a ballast system. By flooding the ballast tank, it is possible to take on approximately 4000 pounds of water, which helps considerably in the handling of an empty vehicle while afloat. This ballast system is so constructed that if the vehicle is to be loaded with cargo in the water the ballast can be released into the bilge and pumped out of the tractor by the bilge pump. Thus a tractor commander can take on or pump out ballast in the water.

The inherent eccentricities of this vehicle make the training of drivers and tractor commanders more difficult than is the case with land tanks. To develop an amphibious vehicle it is necessary to sacrifice some of the characteristics of a land tank and at the same time lose the ease of handling found in a small boat. Large S-shaped grousers are used on the



This recent photo shows the 56th Amphibious Tank and Tractor Battalion unloading LVTs and LVT (A)(5)s from an LST Floating Drydock out in Sagami Bay, Japan. Purpose was to study water action while rehearsing landing methods.



Units of the 747th Amphibious Tank and Tractor Battalion, whose commanders' contributions appear on these pages, are in a simulated water-borne assault along our West Coast in this photo which shows the tanks firing on their shore targets.

track and have the dual function of furnishing traction on land and propelling the tractor in the water. It may be noted that these grousers cause a terrific maintenance problem both for roadways and for the vehicle.

The tractor traveling in 4th gear in the water will travel 5 to 7 miles per hour forward. In reverse the tractor will move about one-half-mile per hour. Therefore it is almost impossible to halt the forward motion of the vehicle in the water by any means other than letting nature take its course.

In the water as on land the course of the vehicle is altered by pulling on the appropriate lateral. However, while water-borne we are confronted with a problem; that is, only wide sweeping turns can be made. Drivers and commanders must anticipate turns far in advance in order to keep from overshooting the mark. The weight distribution of cargo or troops will also affect the steering; therefore it is often necessary to shift cargo or troops to be able to control the LVT in the water.

The maintenance of the LVT is a never-ending problem. The vehicle was designed and manufactured to have a short life. In pulling the scheduled checks nothing can be left to chance. If there is a remote possibility that some part may rust, you may rest assured it is rusty. However, with much attention to maintenance, proper training and supervision of crews the the LVT will certainly do the job it was designed to do.

CAPTAIN K. STUART KUNZ

◆ ◆ ◆

*The writer of the following served in the ETO during World War II with the 20th Armored Division. He returned to active duty in 1949 and served in Japan with the 32nd Infantry Regiment. In 1952 he joined the 747th Amphibious Tank and Tractor Battalion, assuming command of D Company.*

Although the primary mission of the amphibious tractor company is to transport troops ashore during the assault, its role is diversified. Many duties are performed both afloat and

ashore. It is obvious, therefore, that the tractor crews must be adept in the various operations of these versatile vehicles. However, trained personnel are rare among those newly assigned to an amphibious tractor company due to the limited background of amphibious operations. The current doctrine is based on World War II.

D Company of the 747th Amphibious Tank and Tractor Battalion was confronted with the inadequacy of such trained personnel upon the release of reservists in the latter part of 1951. The replacements, primarily infantry, were for the most part unfamiliar with land tanks. Water-borne operations were completely for-



Capt. Pierson

eign to them. This necessitated a stringent training schedule, progressing from the basic to the ultimate goal—an amphibious operation in conjunction with the Navy.

As surf conditions in the early part of 1952 precluded water training, the initial training was restricted to classes and land driving essential to inland operations. Although the tractor company is restricted in extensive land use, it is also recognized that the fire power and mobility may be utilized effectively in defense of shore installations or as secondary lines between the front lines and the rear installations. Exercises were conducted in such defenses, stressing the potentialities as well as the limitations. Emphasis was placed on the self-sufficiency of the tractor men by dis-

mounting the tractor's two .30 caliber and two .50 caliber machine guns with the crew setting up defensive positions. The use of the mobile counterattacking force, and the repelling of counter-landings were also stressed. Vehicle versatility, such as utilizing tractors as prime movers or substituting for trucks in the movement of supplies and troops, became common usage to the crews.

By the time surf conditions permitted water training, the crews were no longer infantrymen, but tankmen. Being water-borne, however, was a departure entailing the development of new skills and techniques. Initially the tractors entered the surf individually, the crews deciding by trial the best approach. One method was moving the tractor as close as possible to the breaking point of the incoming wave, then moving rapidly into the spent breaker and getting out to sea before the following wave could break. A second method was to remain on the beach until the wave broke, then moving rapidly to build momentum, entering the surf before the following wave broke. The first method became more popular as the baptisms were less frequent.

As the proficiency of the crews progressed formation driving and landings were stressed. The tractor's design for land operation limits its maneuverability in water, thus formations are difficult to maintain. Formations, however, are essential to the successful transporting of troops ashore during the assault. The column is used after the troop-loaded tractors depart the LST for the rendezvous area where they are organized into waves. The waves are guided to the line of departure where they are dispatched in line at a prearranged time. They continue on to the beach so as to arrive on schedule. Formations provide control, and control is essential in fulfilling the dictates of the schedule and accomplishment of the mission.

In the fall of 1952 the "Phib Test" maneuvers with the Navy provided a fitting climax to the training of the personnel. But again the depletion of personnel has reduced "Dog" Company to a status nil. However, we're looking forward to our new replacements be they Armor, Infantry, or Artillery. C'mon in, the water's fine!

CAPTAIN WILBER S. PIERSON

ARMOR—March-April, 1953

## FROM THESE PAGES

### 65 Years Ago

I desire to invite the attention of the Association for a few moments this evening to some remarks upon the use of the carbine and pistol on horseback; to discuss the question whether such use is advisable at all, and if so, to what extent and how far it should take the place of the saber and lance.

The U. S. Cavalry is at present armed with the saber, carbine and pistol—the two latter breech-loading fire arms, the ammunition contained in metallic cartridge cases.

It is to be taken for granted that we are to use all these arms in some way or other, and it would seem that definite rules for their use should be laid down by the proper authority.

The fact that widely different opinions as to the proper use of each arm, and in some cases as to whether the arms are useful at all prevail, makes the subject a difficult one. The rapid improvement in fire arms since the introduction of rifled weapons, which is still going on, seemed at one time likely to lessen greatly the value of the cavalry arm. The wars of the last quarter of a century have dissipated that theory, but have led to a great deal of discussion as to its proper use. As regards the great value of its work as a screening and reconnoitering force there is no question. As to its value as a dragoon force, opinion in this country has been favorable, but has not yet obtained very general acceptance in Europe. As to whether it can hereafter appear in heavy masses and by charging in line or column affect the fate of battles, is still a matter of doubt, to be determined only by future wars.

Modern cavalry may be loosely divided into heavy and light cavalry; the former armed with pistol and saber and, in some cases, with the lance, the latter, with pistol, saber and a carbine. In most of the continental armies the carbine has been added to the equipment of the heavy cavalry, so that the two bodies are practically armed alike; the principal difference being in the weight of the men and horses. This is notably the case in the army of Russia, where within a few years, all the lancer regiments, except a few in the Imperial Guard, have been converted into dragoons.

Mounted Fire Action of Cavalry

MAJ. G. B. SANFORD

### 50 Years Ago

As for the battle or fighting tactics, it appears plain that any one who has made a study of the campaigns with the new armament during the past five years must be convinced that the days of shock action and close order formation on the battlefield, are practically over for cavalry, as they are for infantry, and that its principal reliance is now on fire action dismounted. Instead of offensive mounted shock action, it has for the basis of its efficiency in battle, dismounted fire action, and the horse, instead of being regarded as a fighting weapon, becomes the means of rapid transportation from one important strategic or tactical point to another, enabling the soldier to quickly seize and hold vantage points. . . .

Modern tactics for cavalry as well as for infantry are drifting towards a greater dispersion of the men, greater responsibility of subordinates, and especially in training the individual man to be the fighting unit. Tactics must be changed with armament. Certainly the tactics designed for a single loading gun with black powder are not adapted for the present more accurate magazine weapon with smokeless powder and longer range, and it was perfectly logical that cavalry should abandon the old formations laid down in the drill book, when

in contact with the enemy, and adapt itself to the tactical conditions imposed by the new armament. The range of the modern rifle is now so great, and the dangerous fire-swept zone so extended, as to almost preclude the use of cavalry in the close formations heretofore used.

Mounted Rifles

COL. J. A. ARMOUR

### 25 Years Ago

Fire power and mobility, the two most important assets of cavalry, are of their very nature conflicting. This conflict—which is ever present in varying degrees, whether in organization, armament, equipment, or even in training—demands our constant consideration in order that we may achieve that nice balance between the two which is so essential to our war time effectiveness.

In the matter of training we are likely to overlook this desired happy medium between mobility and fire power. This oversight is due, no doubt, partly to the multiplicity of cavalry activities, partly to the inroads upon our time and personnel from the perpetual call for post special duty and fatigue details, and partly, too, to our own natural inclinations that allure us towards those activities in which the horse predominates and thus excuse our negligence toward these equally important duties relative to fire power. It is not surprising, then, if cavalymen lean rather heavily towards mounted training and often do just enough of the other kind to get by. This, if carried far, develops faddists, of which we have our share.

If we would train our cavalry in accordance with our doctrine as to its tactical employment, we must carry out the conception that both mobility and fire power are necessary, that one is the complement of the other. To develop fire power cavalry is armed with the rifle, machine rifle, and machine gun. To these an anti-tank gun will soon be added, as well as the weapons to be adopted for the armored car troop and the tank platoon of the cavalry division. Only the first three weapons will be touched upon here.

Fire Power

COL. AUBREY LIPPINCOTT

### 10 Years Ago

The fate of every offensive is decided on the flanks. From the beginning to the end of an operation, the enemy's attention is riveted on the flanks of the advancing party. It is there that he seeks decisions and directs his retaliatory blows.

By counterattacks on the flanks, the enemy seeks to restore his lost positions, to cover up a break-through, to smash the battle order of the advancing party, and to cut off the advanced units from the reserves.

Continuous action against the flanks of a breakthrough is a typical method of flexible defense. The present war has produced quite a few examples of offensive operations which, though carefully prepared and successfully launched, have been total failures simply because of an unexpected counter-maneuver against the flank.

During one of the German attempts to pierce Soviet defenses in the area southwest of Salingrad, a rather strong tank group, accompanied by a large infantry force, drove a deep wedge into the Soviet lines. But they were cut off, and the Nazi attack failed under sudden Soviet counterblows from both flanks.

Guard Well Your Flanks!

MAJ. GEN. TAGANTSEV  
Red Army

# THE CORE MATTER

A hitherto classified story, a "top secret" request from General Eisenhower led to the almost immediate development of a revolutionary new anti-tank shell that stopped the German Tiger tanks and is now in use in Korea has just recently been revealed.

Brigadier General Paul M. ... General of the Detroit Ordnance District, disclosed the story ... the Ordnance had received in 1944 from the Allied command ... that on "D plus 30" the Allied spearhead was being seriously ... tanks with incredibly thick and impenetrable armor shielding.

The Supreme Commander ... anti-tank shell which could penetrate this armor would prevent ... or even stopping of the Allied invasion.

Army Ordnance had been ... shell, but no such shell was ready for use on Friday, July 7, 1944.

The Detroit Ordnance District ... with the Carboly Department of General Electric Company ... quantities of cutting tools of the hardest metal made by ... This comparatively new metal was making it possible to make ... in a fraction of the time it would have otherwise required.

The Army was aware of ... Carboly Department had provided tungsten carbide for its development, they knew that these initial trials were far from complete. ... the Army asked, to get some shell cores made immediately.

Within two days the Carboly ... produced ten cores for test firing at Aberdeen Proving Grounds, ... estimate of how, where, and with what quantity production ... proved successful.

In normal times, delivery of ... as these would have taken months or even years. And these were ... The shell cores had to be held to comparatively close tolerances ... the finished shell had to be similar to existing 76mm rounds if they ... guns then at the front.

At 9 o'clock on Monday ... first ten were shipped by a special Army plane to the testing ground. ... Two days later, on Wednesday, the twelfth, the second batch ... Thursday, Aberdeen sent the news: "The answer to the German ... firing at even a 20 degree angle, these cores would penetrate ..."

In less than two weeks, ... day. As fast as the shells were assembled, they were loaded ... straight to the front—there were no time-consuming "channels" ... for these shells. They went direct. And it wasn't long after they ... in the planes in France that they were being "loaded" again— ... tankers who were aiming them at the enemy.

Today, these same type shells ... the Korean front.

Photos by General Electric & U. S. Army



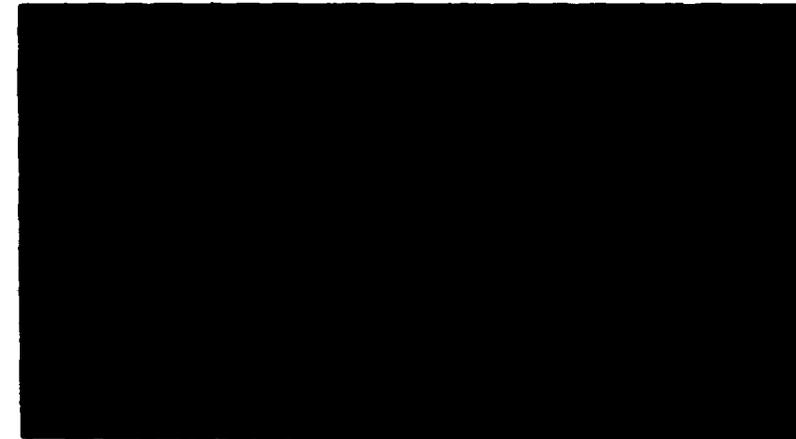
Tungsten carbide cores for anti-tank shells stacked prior to the final heat treatment at the Carboly Department of General Electric's Detroit plant.



The armor-piercing capabilities of tungsten carbide cores are shown in this view of a tank turret with penetrations on various slopes of the surface.



A tungsten carbide core has pierced this armor plate. These anti-tank shells were developed during World War II to stop the powerful German Tiger tanks.



This view shows the relation of the tungsten carbide core to the anti-tank shell. Left to right, the windshield, nose piece, core and body, lens bands.



Here is some of the result on the payoff end. Photo shows a penetration on a Russian T34/85 tank by U. S. tankers in an action on the Korean battlefield.



Where these two items, " ... round hit," mean something—a tank in Korea loads a ... 88mm cannon of a Patton M46.



These things work both ways. This U. S. M4 tank was knocked out by Red anti-tank fire in Korea. This is where the first round hit means the difference.

# WARFARE AND THE FUTURE

by MAJOR GENERAL J. F. C. FULLER

**T**HERE have been only two great revolutions which have radically changed the organization of armies. The first followed the adoption of the horse as a military animal, and the second the introduction of the internal combustion engine as a military machine.

Before the advent of the horse, city and village militias were organized in phalangial order—that is, into an articulated line of men six or more ranks deep, and as fighting consisted in push of pikes, victory depended upon choice of ground and endurance. Because the strength of a phalanx lay in its men maintaining a wall-like front, actions were purely frontal: manoeuvring was virtually impossible and so was pursuit. Even more important, because supply depended upon portage, it was exceedingly difficult to maintain an army for any length of time in the field; therefore rapid wars of conquest, as known in later ages, were impracticable, and in consequence wars were little more than raids restricted to clashes between neighbouring city states.

The introduction of the horse, in about 2000 B.C., not only completely revolutionized this primitive warfare but also the character of war

\*Reprinted from *Strategy Annual*, 1952, with the kind permission of William Clowes & Sons, Ltd., and the Editor.

MAJOR GENERAL J. F. C. FULLER, retired, eminent British military analyst, is the author of many books and articles on the world military picture.

itself. First, it radically changed the supply system of armies, for the horse can carry or haul far more than a man, and what is even more important, unlike man, it can normally live off the country. The first great change was, therefore, the extension of the range of action of armies. Secondly, by using the chariot as a means of human conveyance it enabled troops to be brought in a state of freshness on to the battlefield and massed at tactically advantageous points. Thirdly, when the horse was used to mount the soldier upon—which took place long after chariots were introduced—an arm was created which could operate either independently of or in co-operation with infantry and which eventually evolved into two main types, heavy cavalry for shock action and light for reconnaissance and pursuit.

Though these developments covered many centuries, they finally led to a radical change in organization. The old infantry army of pre-horse days, geared to human muscular power both for fighting and supply, was replaced by an army geared to the muscular power of the horse. Not only was range of action increased, but the introduction of cavalry led to the birth of tactics—ability to reconnoitre, charge, manoeuvre, reinforce, and pursue. Arising out of this emerged a new factor, power to surprise, and therefore attack of an enemy morally as well as physically. In all this the point to note is that the adoption of the horse led to the

development of a totally different army—a horse-powered in place of a man-powered organization.

With the introduction of the internal combustion engine, which could supplement or replace horse-power by mechanical power of a vastly higher ratio, the same evolution was to be expected. And had this been grasped at the opening of the present century, when the motor car was in its infancy and the aeroplane was born, a hypothetical chart could have been drawn showing—very imperfectly though it would have been—the probable influences of the internal combustion engine on military organization. From it could have been learnt what changes were likely to be needed in order to enhance the power of armies; what could be done, and—as important—what could not be done as things actually were, and lastly what steps should be taken in order to render them possible.

Though no such chart was made, and the changes which so vast an increase of motive power would effect were left to circumstances to dictate, changes nevertheless closely followed those which had arisen after the horse was adopted. The first was the rapid replacement of the draught-horse by the lorry, not only in order to supply troops in the field, but also to meet the ever-increasing demands for artillery ammunition. In fact, the great artillery battles of World War I would have been impossible without mechanical transport. The second was the use of the lorry for troop move-

*Though the roots of future warfare are bidden in the past,  
the plant of war must be cultivated creatively.*

*No stereotyped copying is likely to succeed.*

*Victory is to be sought in the imagination.*

ments, which became increasingly frequent during the above war, and normal in the next. The third was the introduction of the tank, armoured mechanical cavalry, of which two main types were designed, a heavy tank for assault and a light for reconnaissance and pursuit. And the fourth, an enormous increase in opportunity and ability to effect surprise.

Here we have the main ingredients of what may be called a "motorized army"—that is, an army organized round the internal combustion engine. In greater part, such an organization was visualized within two months of tanks first taking the field. In the memorandum entitled "A Tank Army," Major (now Lieutenant-General Sir Giffard) Martel opened his study by stating: "Unless this war ends in a disarmament and a temporary universal peace, there can be little doubt that the present unarmoured and unprotected soldier will cease to exist and a tank army will take his place. A present-day army could never fight an army consisting of, say, 2,000 tanks."

Two years later, when the war ended, such an army was almost in being. Not only was the Allied plan of operation for 1919 based on tanks supplied by cross-country tractors, but the following tracked vehicles were either in existence or were being built: self-propelled guns, supply tanks, salvage tanks, armoured infantry carriers, mine exploding tanks, bridging tanks, engineering and sig-

nal tanks: in fact, the main ingredients of a fully motorized army. So convinced was I myself that the internal combustion engine would revolutionize military organization that, in 1922, I wrote: "In the next great war we may expect tactical organization to proceed . . . at enormous speed, if muscle be replaced by petrol . . . weapons will become more and more powerful, protection more and more mobile, mobility more and more speedy, and morale, safeguarded by these three, more and more firm. What does this mean? It means that no army will organize for a twenty-round contest, but instead . . . in such a manner that it can deliver . . . a knock-out blow as soon as possible after the first round opens. An army inferior to its opponent in numbers but superior in mobility will stand every chance of knocking out its adversary before he can even step into the arena."

Years later, in 1936, when again considering this subject, I wrote ". . . even under existing circumstances, it is possible for mechanized arms to overrun a country such as France, Germany, or Poland in a fortnight."

Although in the last war this prediction was dramatically fulfilled, during it a fully motorized army was never created, armies remaining largely in their chariot stage. Even so elementary a question as whether there should be one or two types of tanks was still being debated when the war ended. This was due to confused thinking, arising out of the

inability of the soldiers to realize that an army should be organized around the prime motive power of its day.

Let me here recapitulate in slightly different form. A man is not a weapon, he is a one-tenth horse-power creature who can carry weapons or a load, and as long as he is the sole means of carrying weapons or loads, he is the prime mover. Similarly with the horse, it is not a weapon, it is an animal approximately ten times as powerful as man. It can carry a man and his weapons and haul a weapon or a cart. As long as a more powerful motive force does not exist, the horse remains the prime mover. Lastly, as regards the tank, it is not a weapon—not incidentally is an aeroplane. It is an armoured, self-propelled cross-country vehicle many times more powerful and less vulnerable than the horse. As long as it maintains its supremacy it cannot be other than the prime mover.

Had the soldier before the last war looked upon an army as a complex machine instead of as a bagful of war tools, he would not only have built tanks but also bullet-proof cross-country supply vehicles. He would not have decided to haul his guns with tractors, but would have mounted them on bullet-proof machines, and he would have moved his infantry in bullet-proof carriers instead of in lorries. In short, he would have built his army around the petrol engine, armour, and the caterpillar track, as armies of old were built around the horse, body armour,

and the wheel. True, in the last war many of these changes did materialize, but only through force of circumstances and not in accord with an organized pattern—a blueprint of a fully motorized army.

Now it is not my intention in this study to elaborate such a point, for the simple reason that I do not possess the requisite technical and administrative knowledge to do so. Instead, it is to examine certain tank problems which, in my opinion, have an important bearing on future warfare, and which may possibly assist the would-be army designer in devising a fully motorized army.

The problems I have in mind stem logically from those which arose after the horse first became a military animal, and though I will omit increased radius of action, which is now so apparent that to examine it would be platitudinous, I will consider the remaining four: surprise, supply, co-ordination, and independent action. After which I will examine three special problems—war with Russia, night operations, and the influence of atomic weapons on armoured mobility.

**Surprise.**—How to effect surprise is the basic problem in tank warfare, and one which in peace time is apt to be overlooked, and therefore in war time to become doubly conspicuous.

After the battle of the Somme in 1916, when tanks first took the field, we were told that it was a mistake to have used them because there were not sufficient to warrant success and their surprise effect was consequently lost. After the battle of Cambrai the following year, in which tanks played a decisive part, we were told that a similar surprise could never again be repeated. Of course surprise was not lost and of course it could be repeated, and could not fail to be as long as tank armour rendered rifle and machine-gun fire ineffective. That anti-tank weapons modify tank surprise is obvious, but they cannot annihilate it, because the main power of the tank does not rest in its armour and weapons but in the paralysing effect its mobility has on the enemy's mind.

In Poland in 1939 the effect of the German armoured assault was im-

mediate, for within forty-eight hours of the initial attack the Polish G.H.Q. was paralysed, whereupon the body of the Polish army fell to pieces. This sudden collapse was not only due to the unmechanized state of the Polish army but, as may be seen in the next great assault on the Netherlands and France, to correct tank tactics, for in May, 1940, the French had greater numbers of tanks than the Germans, as well as tanks of a superior quality.

In this second German invasion a British staff officer, at the time serving in France, on 19th May wrote: "The Panzers still drive about at their own sweet will . . . with no main body behind them. No infantry within sixty miles, just motor cyclists and tanks . . . News that the Panzers are in Amiens. This is like some ridiculous nightmare. . . . The Germans have taken every risk—criminally foolish risks—they have got away with it . . . they have done everything that should not be done by orthodox, book-trained, stereotyped soldiers, and they have made no mistake. The French General Staff have been paralysed by this unorthodox war of movement. The fluid conditions prevailing are not dealt with in the text-books, and the 1914 brains of the French generals responsible for formulating the plans of the Allied armies are incapable of functioning in this astonishing layout."

#### Stop Those Tanks!

Not only were the French G.H.Q. surprised, but also the German, for on several occasions during the assault *à outrance* General Guderian was ordered to halt his tanks so that the infantry might catch up!

In this case it may be said that the French tactical collapse was due to faulty tank organization. Though this defect certainly contributed to German success, in the battle of Tunis in 1943, when the British and Americans were at clinch with the Germans and Italians, identical results are to be seen. At the time of the final Axis collapse a British war correspondent wrote: "Our tanks roared past German airfields, workshops, petrol and ammunition dumps, and gun positions. They did not stop to

take prisoners—things had gone far beyond that. If a comet had rushed down the road it could hardly have made a greater impression . . . the German generals gave up giving orders since they were completely out of touch . . . in a contagion of doubt and fear the German Army turned tail . . . and became a rabble.

Again, it was the same in 1944 during the invasion of Normandy, when tanks were called upon to operate in a difficult terrain and were faced by numerous and powerful anti-tank weapons. In August, when General Patton broke through at Avranches and set out on his headlong advance, this is what we read: "Halt for nothing" was the guiding principle of the armoured columns. . . . Forward patrols [of armour] shot up everything, batteries, headquarters, strongpoints. . . . Disorganization robbed them [the Germans] of both a plan and the means to carry it out."

Surprise was as potent in 1944 as in 1939 or in 1917; therefore we may conclude that it will remain so, though the means of effecting it will have to be modified, not only according with the terrain but also with reference to the anti-tank weapons tanks will be called upon to face.

What does all this point to? That whatever tank organization is elaborated in the future, it will be defective unless it permits of violent surprise, and the violence of surprise will in the future, as in the past, be in direct ratio to the mobility tanks are able to develop and maintain.

**Supply.**—The above logically introduces the problem of logistics, that branch of the art of war which embraces transport and supply and which constitutes the basis of strategy and tactics. Because, as Napoleon truly said, "an army marches on its stomach," it follows that unless the speed of its supply services is greater than or equal to that of its fighting arms, the latter cannot make the most of their mobility.

Two examples taken from the last war suffice to illustrate this: namely, the initial German Russian campaign and the 1914 Allied campaign in France.

In the first the Germans were faced

by a very different problem from the one they had to solve in France. The depth of Russia was immensely greater, and whereas in France road and rail communications were plentiful and good, in Russia they were few and indifferent. Added to this on account of climate—rain, frost, and thaw—the season of mobile operations in Russia was restricted to between the months of June and October.

To win the campaign was possible were Moscow occupied before the autumn rains set in, because Moscow is the hub of the entire Russian rail system, and once gained, the supply of the Russian armies would be so crippled that a knock-but blow might have been struck in 1942. The logistical problem was, therefore, how to cross a distance of some 800 operational miles in three months.

As in France, the campaign was opened with an armoured assault, which was so rapid that in twenty-four days some 500 miles were traversed and Smolensk reached. Could this speed of advance have been maintained, there is little doubt that Moscow would have been occupied early in September. Why was it not maintained? Setting aside Hitler's faulty strategy, the answer is, because of the breakdown of the German supply system. The armoured divisions were not fed by cross-country supply columns, but depended on lorry transport which was tied to the roads, and in rainy weather was restricted to the main roads—few in number—because the secondary roads were at once converted into rivers of mud. Further, the motorized infantry divisions, also lorry borne, could not keep pace with the armoured divisions, which neither could nor were intended to hold ground.

After 10th October, General Guderian writes: "The next few weeks were dominated by mud. Wheeled vehicles could only advance with the help of tracked vehicles," and "these latter, having to perform tasks for which they were not intended, rapidly wore out." Also he informs us that "corduroy roads had to be laboriously laid for miles on end in order to ensure that the troops received even the limited supplies available. The

strength of the advancing units was dependent less on the number of men than on the amount of petrol on hand to keep them going." Lastly, when winter came, "in order to start the engines of the tanks, fires had to be lit beneath them. Fuel was freezing on occasions and the oil became viscous."

The second example is very different, because distance was less, roads good, and climate normal Western Europe summer weather.

#### Logistics and Strategy

On 31st July, 1944, General Patton's Third Army broke through the German left flank at Avranches, after which the speed of its advance was such that a supply crisis began to develop. When on 17th August, the Third Army neared the Seine, General Eisenhower informs us that "truck transportation became utterly inadequate to cope with the situation," and, in consequence, aircraft had to be withdrawn from the newly created First Allied Airborne Army as well as from the Strategic Bombing Force in order to supply Patton with 1,000 tons of petrol daily, a figure which soon had to be doubled. "This type of last-minute planning," comments General Martel, "is not the way to organize these vitally important administrative arrangements in fast mobile warfare."

Why did the crisis take hold? The answer is, because air power had been so fully exploited strategically and tactically that, when supremacy in the air was assured, it was found that its administrative possibilities had been overlooked. In fact, it had not been grasped that, because the aeroplane can dispense with roads and because it is the most mobile vehicle in existence, it is the ideal supply transporter when cost does not enter the question. Had fewer bombers been built, and in their stead had General Eisenhower had at his call, say, 2,000 flying four-ton tankers, there need have been no pause west of the Rhine; in which case the high probability is that Berlin would have been entered by the Allied powers long before Christmas.

The following, therefore, are the

two most important lessons to be learnt and applied before another war engulfs us: (1) Because armoured forces move on tracks, their supply vehicles must do the same. And (2) because in highly mobile operations road, rail, and cross-country supply may not prove sufficient, organized aerial supply columns must be at hand to feed the chase at a moment's notice.

Granted power to surprise and means to supply armoured forces, I will next turn to the question of tank co-operation and independent action, which are best considered conjointly.

**Co-operation and Independent Action.**—During the last war, and mainly on the insistence of Field-Marshal Montgomery, it was decided that a dual-purpose tank was all that was needed—that is, a tank which equally well can co-operate with infantry and work independently.

This conception, due to confused thinking, was quite unknown to the original tank designers, who worked on the principle that a heavy, slow-moving tank would be required to co-operate with infantry and a lighter and faster one to co-operate with cavalry. What, at the time, was not appreciated was that, though heavy tanks and infantry could co-operate, as they successfully did at the battles of Cambrai and Amiens, on account of the vulnerability of the horse, light tanks could not effectively do so with cavalry. What they could do, however, was to replace cavalry altogether.

Between the two wars this replacement was made—our cavalry regiments were converted into tank regiments and equipped with medium tanks. But during this change-over, mainly because of its cost, the heavy assault tank faded out of the picture until 1938, when it was resurrected in the form of the Infantry Tank and organized in Army Tank Brigades. At about the same time the faster tanks became known as Cruisers and were formed into armoured divisions. The main differences between these two types were that, whereas the Infantry Tank had a maximum speed of 15 m.p.h. and was protected by armour varying from 78 mm. to 65 mm. in thickness, the speed of the

whereas in position warfare armour and gun dominate, in mobile warfare it's speed that does

in future warfare, armies must be capable of developing far higher mobility than in the past

Cruiser was 28 m.p.h. with armour varying between 40 mm. and 20 mm. Both were armed with a 2-pdr. gun.

Meanwhile, late in the field, in order to guarantee the greatest output of tanks, the Germans concentrated on two main models, the Pz. Kw. III and Pz. Kw. IV (a close support tank). Both were medium machines with a speed of about 20 m.p.h. the armour of the one varying from 50 mm. to 30 mm. and of the others from 30 mm. to 20 mm. The first was armed with a 50 mm. gun and the second with a 75 mm. With these machines, supported by a large number of six and nine ton light tanks, the Germans overran Poland and France in 1939 and 1940.

It was in the second of these campaigns that the British Infantry tanks, under General Martel, proved their worth. Of their action on 21st May, 1940, he writes: "This attack was just the type of action for which the infantry tank was intended. There was no case of a long move round a flank for which cruiser tanks are needed. . . . His tanks [German] were knocked out quite easily," whereas some of our tanks "were hit fifteen times without having any effect on the tank or the crew. When a tank can advance and ignore the fire of the enemy anti-tank guns, a great moral effect is produced. Such a tank dominates the battlefield."

The obvious lesson of this action, that in close-fighting armour and gun power and not speed are the decisive factors, was but partially appreciated by the Germans. Though they reinforced their armour, they continued to use Mark III's and IV's until in Russia, in November, 1941, they came up against the Russian T.34 cruiser tanks. These machines were more heavily armoured and gunned, and against them the German 37-mm. anti-tank gun proved ineffective. "The result," writes General Guderian, "was a panic."

From then on the battle of the types steadily passed from its independent cavalry to its co-operative infantry phase. We produced the Churchill Infantry Tank with armour varying from 90 mm. to 75 mm., and the Germans the Panther and Tiger,

the one with from 100 mm. to 45 mm. of armour, and the other with 102 mm. to 62 mm. Of the value of these infantry tanks two examples suffice: the break-through at the battle of El Alamein in 1942, and the fighting in Normandy in 1944.

In the first, which was a battle of assault against a prepared position, the cruiser tanks used—namely, the American Grant and Sherman—were not sufficiently armoured, and in consequence suffered heavy casualties. "There is no doubt," writes General Martel, "that if a brigade of Churchill tanks had been available, they could have overcome . . . [the] 50-mm. anti-tank guns quite easily." Actually, only four Churchill tanks were used in this battle. "All . . . were struck many times by 50-mm. anti-tank guns, and there was only one penetration."

#### Battle of Types

Of the fighting in Normandy, Martel says: "The German Panther tank showed its superiority against our Cromwell tank [cruiser] . . . by having heavier armour in front and a more powerful gun. The ground in Normandy was so enclosed that head-on fighting between tanks was a common occurrence and an advantage to the Panther tank . . . Our Shermans and Cromwells were no match for them and our Churchills were only a little better. What we wanted in this type of warfare was the new design of really heavy infantry tank which we had always asked for, but this was not available. Future operations however, showed that the Panthers were equally unable to hold up our armoured divisions [cruisers] when it became a war of movement in open spaces."

The conclusions to be drawn from these two examples, and others could be added, are that, whereas in position warfare armour and gun dominate, in mobile warfare it is speed which does so. This truism, which should never have been lost sight of, has now been accepted, for our present policy is to build three main types of tank, a cruiser, an infantry tank, and a light tank. Therefore, in idea, we are approximately back to where

we were in 1916-18, and can design for the future on the proved logic of the past.

*War with Russia.*—This being so, our tank problem is no longer a question of types; instead it is one of proportion between types *vis-à-vis* Russia, our most formidable potential enemy; and the answer must be sought in the tactics and organizations of the Russian Army. What are the facts?

The first is, that the power of the Russian army derives from its mass, and not from its mobility: it is a quantity army and as such it stands unrivalled. The second is, in order to prevent congestion of supply, mass compels movement over a wide front. And the third, which logically springs from the second, is that Russian offensives are nearly always launched on extensive fronts. They may be compared to inundations which peter out against stubborn resistance and flow through at weak points. They seek the lowest tactical levels, and normally are, therefore, slow and percolative.

Like all past Oriental armies, the Russian is composed of two categories of troops, a *corps d'élite* and an armed horde. The first is *par excellence* the fighting instrument; the horde is secondary to it, and should the enemy's resistance be negligible, is the occupying instrument which, by flooding over the territories conquered by the first, holds them in submission by terror.

The existing *corps d'élite* is composed of heavy tanks and picked infantry working in close combination. The horde, of infantry, cossacks, etc., largely depends for supply on horse-drawn vehicles. Though in dry weather the expanses of Russia enable horse transport to move across country, in the highly cultivated and urbanized areas of Central and Western Europe, many of which are also mountainous, masses of horse-drawn vehicles are road-blockers.

Because both categories of troops have to be supplied, it follows that the greater the horde the more complex becomes the supply of the *corps d'élite*. Therefore, that the Achilles heel of the latter is to be sought in

its supply system. Today this holds good more so than in the past, because petrol-fed vehicles cannot live on the land; throughout they have to be supplied from the rear.

Without supply—particularly petrol and oil—the Russian *corps d'élite* becomes inoperative. Therefore the problem is, not how to defeat it by superior strength, but by superior tactics: (1) How to slow down the *corps d'élite* by an elastic frontal resistance, and (2) how to break through the Russian front at selected points and paralyse the communications in rear of it. Otherwise put, how to cut the *corps d'élite* off from its supply.

So far as tanks are concerned, the first of these operations demands machines which can deal with the heaviest Russian tank, also powerful self-propelled artillery and large numbers of mobile anti-tank weapons. The second demands tanks of the highest mobility as well as motorized infantry. Both should be supported by powerful tactical air forces.

It may be said that the Russians will be able to establish so formidable a battlefield that a break-through, such as witnessed in France both in 1940 and 1944, is no longer possible. But it should not be overlooked that at the opening of a war conditions are generally more fluid than later on. The reason is that the sudden change over from peace to war is followed by an experimental tactical period in which no one from commander-in-chief to private soldier is certain of himself and in which friction is prevalent until operations are run in. The psychology of an untried army differs from that of a salted one, and though, when a war is well ground in, setbacks appear at their true value, at the opening of a war they are apt to be exaggerated. Thus, for instance, should the Russian armies, on taking the field, suddenly suffer an unexpected reverse, its effect, not only on their leaders and their masters in the Kremlin, but also on the satellite and subjugated peoples, might well prove catastrophic.

To repeat the tank tactics of the last war, whether on the lines of Guderian in 1940 or of Patton in 1944,

is not sufficient, for copies seldom equal originals. Something novel and surprising is, therefore, needed.

*Night Operations.*—Today the only tactical field which remains largely unexploited is night fighting. Once armies went into winter quarters and cut down their operational year by six months. Still armies go into night quarters and cut down their operational day by twelve hours. When are soldiers going to tumble to it that an army which can fight round the clock has a hundred per cent. advantage over one which can fight only half-way round it?

#### Night Into Day

This problem was tackled before the last war and led to the invention of the C.D.L., a tank fitted with a powerful projector of special design emitting a fan-shaped, flickering beam of light which illuminated a wide field and dazzled the eye. The projector was protected in such a way that it could not be put out of action by anything less than a direct hit with a shell which could penetrate five inches of armour.

The purpose of this weapon was to solve the problem of night fighting on a large and organized scale, enabling an attack to be carried out more methodically and rapidly than during daylight, and far more economically and securely; for whereas the field over which the attacker advanced was brilliantly illuminated, all the defender was able to see was a wide expanse of dazzling light which obscured everything behind it, and which was so brilliant that it rendered aimed fire by eye impossible.

That the C.D.L. was considered of value is proved by the fact that two brigades of C.D.L.s, one of three battalions and the other of two, were raised in England, as well as two Armoured Groups, each of three battalions, in America. Nevertheless, though prior to D Day (6th June, 1944), the 1st (C.D.L.) Tank Brigade and the 10th (C.D.L.) Armoured Group were fully mobilized and ready to proceed overseas, so little interest was taken in the new weapon that it was not until 11th August that the first of these formations was

landed in France, the second following eleven days later. Even then, instead of being used in the operations following on the break-through of the U. S. Third Army, operations in which the Germans could seldom move except under cover at night, the six battalions were never moved forward from their disembarkation camps and were gradually disbanded, as were the rest.

Though the C.D.L.s have long vanished on the scrap heaps, the idea of turning night into day still offers endless tactical possibilities, the most obvious being the ability to break through an enemy's front under cover of darkness and put *blitzkrieg* into pyjamas. If in the last war the French generals were paralysed by the German tanks in broad daylight, what would have been their state of mind had it been possible for the latter to operate even more freely during the night than during the day, and thereby establish a round-the-clock *blitzkrieg*? Transfer this possibility to the situation now facing us, and a solution to the problem of how the Russian front can be penetrated and its rear services thrown into panic becomes apparent. Thus we return to the basic tank problem—surprise.

*Atomic Warfare.*—Lastly, as regards atomic weapons, what influence will they have on the tank? One thing is certain, their introduction will enhance the value of mobility, because rapid dispersions and concentrations, such as can be effected with cross-country vehicles, will become doubly necessary. Further, as the 1951 tests in Nevada have shown, armoured vehicles are more immune to blast, heat, and radiation than unarmoured. Therefore, of all forces armoured ones are the least vulnerable on the atomic battlefield.

The deductions to be drawn from this are that, in future warfare, armies should not only be armoured but, in order that they may be able to disperse and concentrate with extreme rapidity, they must be capable of developing a far higher mobility than in the past. On this question Major Lamar McFadden Prosser writes:\*

\*"Armor," Vol. LXI, No. 1, January-February, 1952.

"Forces must concentrate only at the critical moment of 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."

Further, he adds: "All now seems to hinge on mobility. The speed of manoeuvre 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 armoured, introduces problems too numerous to be settled without experimentation. But that all troops will be mounted in tracked vehicles appears to be inevitable."

Thus we reach the summit of the second great revolution in the organization of armies.

**Conclusions.**—Finally, what does all this point to? That, though tactical essentials remain constant, unceasing readjustments of means have to be made in order to meet the changing conditions of war. The soldier has still to hit, to guard, and to move; he has still to endure, to be supplied, and to surprise. New weapons do not change these things, but how to effect them always changes.

Fear of the atomic bomb may abolish war by making it appear too unprofitable to wage, but as long as wars continue, though this annihilating weapon will change methods, it can no more change the essentials of tactics than did the discovery of gunpowder. The soldier will go on hitting, guarding, and moving. Without endurance he will be unnerved; without munitions and food he cannot fight, and surprise will remain for him his staunchest friend and most deadly foe.

Though the roots of future warfare are hidden in the past, the plant of war must be cultivated creatively. No stereotyped copying is likely to succeed. Victory is to be sought in the imagination.

# War-Making Powers

by CAPTAIN EDWARD J. ROXBURY, JR.

*Against the background of a United Nations action in Korea and truce team operations at several critical trouble spots in the world, the international body's legal structure for military action to preserve the peace is a matter of great interest. Can the UN order out forces against an aggressor?*

**I**N April 1945, with the flush of victory permeating the United Nations, a meeting was held in San Francisco to write the charter for a new world organization. This organization was to include all "peace-loving" nations of the world, and these nations were to work together to ensure the peace. This new world peace body was enthusiastically accepted by the majority of the people of the United States.

In 1919, President Wilson had brought back from Paris the covenant for a similar organization, boldly titled the League of Nations. This country had turned its back on it. There was no less a desire for universal peace than in 1945, but indifference born of the long war, suspicion of foreigners, a fear of commitments, and, perhaps most of all, domestic politics kept the United States out of the League of Nations. Senator Borah expressed a widely held view in a debate in the Senate concerning the approval of the League, when he said, "there are some things in this world more to be

desired than peace, and one of them is the unembarrassed and unhampered and untrammelled political independence of this republic. If peace cannot be had without our surrendering that freedom of action, then I am not for peace."

In 1919, rejection; in 1945, almost universal acceptance. A recital of the reasons for this change is neither necessary nor pertinent. But what is remarkable is that in either case acceptance or rejection by the majority of the people of the United States was largely based on the same misunderstanding of the role of these world bodies. The misconception as to the actual amount of power possessed by these organizations was the cause of this misunderstanding.

The League of Nations and the United Nations have been called "super-governments"; they have been likened to our Congress or the British Parliament. They have been characterized as law-making bodies which would impinge upon our sovereignty and lay down rules for the governing of the world. In both cases these definitions were to a great extent believed. This belief was a large factor in turning the United States away from the League of Nations in 1919. In 1945, perhaps believing that "un-

embarrassed and unhampered and untrammelled political independence" was not quite so important as peace, we accepted the United Nations.

That either world organization was or is in any way a "super-government" or a law-making body is, of course, untrue.

The United Nations has had, however, a further burden of misunderstanding to bear. As the UN came into being the idea was prevalent that there also had been created within it a "world police force" made up of soldiers of all nations, or a multi-national army under United Nations control. Critics said that our Congress' prerogative of declaring war had been abdicated in favor of the Security Council. At best it was somehow felt that if called upon, the United States had to furnish troops to the United Nations. Confusion about the war-making power of the UN still exists today.

The League of Nations Covenant had done little more than hint that in case of dire need the members would band together militarily to enforce the peace. The United Nations Charter seems to go much further. Paragraph 1 of Article 43 says, "All Members of the United Nations, in order to contribute to the maintenance of international peace and security, undertake to make available to the Security Council, on its call and in accordance with a special agreement or agreements, armed forces assistance, and facilities, including rights of passage, necessary for the purpose of maintaining international peace and security." Article 47 creates for the use of the Security Council a Military Staff so it may properly use the military forces for the maintenance of peace and security—in effect, an United Nations army, navy, and air force.

This would seem to mean that the "world police force" was actually legally in existence. Each member should have available, on call, an

armed force which would perform at the bidding of the Security Council.

In Korea, there is every external manifestation of this force. The United Nations flag is used; the troops are called the United Nations Forces; the commanders are issuing orders as United Nations orders. The army there is multi-national and although the United States is furnishing the ranking officers, other nations are consulted on major decisions. Political decisions were commonly supposed even by members of the committee on Armed Services of the U. S. Senate to come from the UN itself. All outward aspects make the forces fighting in Korea appear to be an army fielded by, and under the command of, the United Nations.

### The Big Question

Can the UN order the United States and other nations to furnish troops to repel a new aggression if there is another breach of the peace similar to Korea? Does the United Nations, in other words, have any practical war-making power?

Actions of some members of the UN give us more than a hint of the answers to these questions. The dramatic refusal of Russia to do anything but hinder the avowed purposes of the fighting in Korea does not bring her dismissal from the UN. The failure of many nations, although friendly to our cause, to furnish troops or equipment to Korea has brought them no reprisals. These examples indicate that there must be some flaw in the assumption that the United Nations can order armies into action.

The flaw is to be found in the Charter of the UN itself and in the assumption, at the time of the writing of the Charter, of Big Power accord. If Article 43 is reread, the phrase "in accordance with special agreement or agreements" will be found. Paragraphs 2 and 3 of the article go on to explain what is meant

by this phrase. They are worded so that no nation is compelled to contribute armed forces to the United Nations unless they have made an agreement beforehand as to exactly what armed forces they are willing to allow it to use. In other words, before the UN can have an army, the separate nations must agree to give it one.

At no time, including the present, since the United Nations has been formed has any nation made any agreement to furnish any type of armed forces to the international body.

In all fairness to the Charter, it should be said that an article is included which was supposed to take care of the interim period between the signing of the Charter and the reaching of military agreements with the UN. But, this article, 106, again is based on Great Power cooperation, and consequently has had no useful function.

Actually, then, the UN has no practical war-making power at all, simply because it has no army.

In light of this, it is interesting to read the resolutions condemning the actions of the North Koreans as a breach of the peace and urging aid for the South Koreans, which were passed by the Security Council on June 25 and 27 of 1950. They very carefully use the words "calls upon" and "recommends" when trying to get nations to take action against the North Koreans. No stronger words could be used, for no members were compelled to obey. Suggestion was all the power the United Nations had.

Although it is evident that the United States and many other nations will voluntarily furnish forces to fight for the principles of the United Nations, the fact remains that, at the present time, the United Nations as a political body has no actual power of its own to mount an army in the field or to order any nation to do so.

CAPTAIN EDWARD J. ROXBURY, JR., is a 1946 graduate of the U. S. Military Academy. He is attending Columbia University for a course in International Relations.

# Tank Gunnery in Eastern Korea

by FIRST LIEUTENANT SETH WIARD, JR.

**L**ONG the eastern front in Korea, armor, distasteful as the thought may be, is cast in the role of front line artillery. Both in the Punchbowl sector and in the Mundung-ni Valley, the only movement of armor was onto and off the MLR.

In this entirely different part that armor has to play on this sector of the front, several little-thought-of difficulties were encountered and overcome. They should prove of interest to all Armor officers.

The absence of enemy armor activity on the eastern front leaves armor only bunkers, gun positions, trenches and small groups of enemy personnel as targets. Especially in the eastern section of the Punchbowl, tank targets are far beyond the accredited accurate range of the 76mm M1A2 mounted on the M4A3E8 tank with which this company is equipped.

## Effects of Temperature Variation

It was standard practice, on line, to keep 9 extra rounds of HE on the turret floor as a supplement to our basic load. When shooting at targets at a range of 4,000 yards or more, it was found that a definite increase of approximately 100 yards was necessary when we switched to ammunition from the turret wells. This was caused by the slightly lower temperature of the rounds in the wells as opposed to those lying on the turret floor. This lessening of range was especially noticeable whenever ammunition from our storage bunkers was used. It is suggested that, whenever possible, ammunition from a

common source be used to minimize correcting ranges due to temperature variation of shells. There are few occasions when this cannot be done with armor on the MLR. This factor of range variation is only applicable during the extremely hot months of June, July and August.

## Bunker Destruction

Probably the most frequent target that the tanker will be called upon to destroy is the bunker. In general all that can be observed of this kind of installation is a small aperture. Often this kind of target can be located only by observing personnel entering and leaving a certain area that may appear to be solely a group of bushes or small trees. For destruction of a target of this type it is recommended that, if one cannot see an aperture, the tank use HE to expose a side or an aperture, then place APC at the point about a yard below the center of the mass or aperture. This will crack the foundations and allow HE (delay) to clear out the walls and collapse the ceiling. If it is impossible to do this due to an extremely heavy construction, WP should be placed in the aperture for incendiary and anti-personnel effect.

The North Korean and Chinese forces have a habit of constructing numerous dummy bunkers, which are built solely to cause depletion of our ammunition supply. It has been found that the most effective way to deal with this sort of object is to damage the bunker, not to destroy it. After this has been accomplished, the subject bunker and all approaches should be kept under constant observation to check on any rebuilding or traffic into or out of it. If an appreciable amount of activity is noticed

in or around the bunker it should be dealt with as any other installation of that kind.

## HE—WP Variations

Although the firing tables of the 76mm gun state that the shells HE, M42A1, and Smoke, WP T13E2, are identical in so far as ballistics are concerned, this was not found to be true at long ranges in actual combat use. Adjustment of HE and WP proved that a definite range decrease was necessary to bring the WP to the point of HE impact. In firing at targets at a range of 3,000 yards or more it was necessary to decrease the range by 50 yards to place the WP on target. At targets within the normal effective range of the 76mm gun, this variation was not too noticeable, but as I stated before, the majority of our targets were beyond the accredited effective range.

## Indirect Tank Fire Adjustment

Replacements from the States were found to be generally unfamiliar with indirect fire adjustment. We were forced to train them on line in the use of the M9 Quadrant and the Azimuth Indicator. A knowledge of these instruments is indispensable inasmuch as the majority of adjustment was made by the platoon leader from a battalion or regimental observation post and the gunners were unable, in a large number of cases, to make an adjustment fine enough with their direct fire sights. It has been stressed in all gunnery training that a finer adjustment than 50 yards was impractical with the tank gun. When firing at OPs, which were usually placed on top of ridge lines, an adjustment of 25 yards or even less had to be made to insure a target hit. Many

times an adjustment of 50 yards would place the projectile over the ridge, while the strike of the projectile, if not increased, would be well below the target. These situations necessitated an addition of 25 yards or less to obtain a target hit.

## Concrete Piercing Fuses

Concrete piercing fuses were available to all platoons in the company and were used both in the Punchbowl and the Mundung-ni Valley. Contrary to popular opinion, the use of concrete piercing fuses does alter the ballistics of the M42A1 shell. Whenever we replaced the PD M48 fuse with the CP T105 fuse it was necessary to increase the range to obtain a target hit. A general rule of thumb that proved to be practical was to make the same adjustment as if we switched to APC with a muzzle velocity of 2600 FPS. As a check on my findings, I inquired of Lt. S. Randall of C Battery of the 21st AAA Battalion, how he observed the effect of the fuses. (We supply his 90mm gun with the CP T105 fuse.) He stated that he was forced to make approximately the same adjustment when firing this fuse. We only used this fuse against rock walls and concrete bunkers, due to the fact that it must strike a very hard object to detonate. When using these fuses the best results were obtained by first clearing all logs and dirt away from the object with HE. This was necessary due to the fact that the shell would tend to slow up before striking the actual concrete or rock and thus fail to strike hard enough to detonate.

## Dispersion Due to Overheating

Sustained firing at long ranges will have a noticeable effect upon the accuracy of the tank gun. Firing at over 3,000 yards, if continued past 15 rounds, will tend to become erratic and result in a waste of ammunition. The normal dispersion pattern was greatly elongated almost to the point of impracticability due to the overheating of the gun. A method that we devised that proved very effective was to use one tank to initially take the target under fire. As soon as the dispersion pattern became stretched so as to make adjustment impossible, a second tank that had been observing the firing would

## Quotable Quotes

The following is a quotation from a recent address by Lt. Gen. Willis D. Crittendon before the assembled officers of the staff and faculty of the Armored School:

"The Korean fighting is a special kind of war, and a very important one to us Americans.

"However, looking beyond Korea to possible action elsewhere, with a completely different situation, we anticipate that full weight will be given to the value of the armored division and combat command.

"We can see the urgent necessity for the hard-hitting, self-contained armored units that knifed their way across France and Germany.

"No American can doubt the combat effectiveness of our proven United States armored units of divisional size, or even an armored corps made up of Armor, Infantry, Artillery, Engineers and all service components, supported overhead by tactical air.

"They demonstrated their worth in World War II, and will do it again, if called into action.

"So while giving the fullest, possible accolade to the small tank units fighting so magnificently in Korea, we must not lose sight of their big brother, the armored division, and the proven wallop he carries.

"Both are essential to present-day American success at arms.

"And I personally will not be convinced that we are making the maximum use of armor, until we also organize Armored Corps."

"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.

"However, the mobile, armor-protected fire power of a tank, which provides the 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.

"Armor in division strength, incorporating all the technological advances which our industrial supremacy can provide, may be counted upon to make a decisive contribution to victory in any major conflict in the future.

"It has been conclusively proven that insofar as ground forces are concerned, Armor properly supported, is one of the most decisive combat arms, the battlefield has ever known."

take over the target. This tank would obtain the exact range from the first tank by radio and be able to place the first round close to the target. Of course, the rate at which the gun would overheat is entirely dependent upon the rate of fire, and individual platoon leaders would have to work that out for themselves.

## Tank Positions

In general, our tank positions were on the skyline in hull defile and were not moved out of firing position, except for maintenance. This, of course, goes against basic armored doctrine almost 100%; however, a careful study of the reasons behind this and the advantages gained from so placing our tanks will, I believe, show that more is to be gained from this than is lost.

In the first place, by having our tanks on the skyline we thus throw upon the enemy the same problem that we encountered in shooting against their OPs. Any rounds that are short of our tanks will fall below them and cause no damage. Any overs will fall into the valley to our rear and will be impossible to adjust. When you couple this with the fact that our tanks can be firing back at the opposing gun within 3 or 4 rounds, one can see the advantages to this method.

Probably the strongest argument that I can advance in favor of leaving our tanks in firing position constantly is the rapidity with which we can engage targets of opportunity. On one occasion in the Mundung-ni Valley I was able to put an HE shell in the middle of a group of Chinese 35 seconds after they had been observed from the Regimental OP. No other weapon on the MLR can engage a target as rapidly and effectively as a tank.

## Adaptability of Armor

As many tank officers have realized, Korea is not particularly well suited to armor. However, if there are U. S. troops operating in any terrain, armor can operate in that country. It is true that we cannot operate in the manner that we would like to, but adaptability is one of the strong points of armor. In Korea, under adverse conditions, armor has again risen to the occasion and proved its indispensability as a member of the combat arms.

FIRST LIEUTENANT SETH WIARD, JR., is assigned to the Tank Company, 14th Infantry Regiment, 23rd Infantry Division stationed in Korea.

Forces must concentrate only at the critical moment of 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."

Further, he adds: "All now seems to hinge on mobility. The speed of manoeuvre 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 armoured, introduces problems too numerous to be settled without experimentation. But that all troops will be mounted in tracked vehicles appears to be inevitable."

Thus we reach the summit of the second great revolution in the organization of armies.

**Conclusions.**—Finally, what does all this point to? That, though tactical essentials remain constant, unceasing readjustments of means have to be made in order to meet the changing conditions of war. The soldier has still to hit, to guard, and to move; he has still to endure, to be supplied, and to surprise. New weapons do not change these things, but how to effect them always changes.

Fear of the atomic bomb may abolish war by making it appear too unprofitable to wage; but as long as wars continue, though this annihilating weapon will change methods, it can no more change the essentials of tactics than did the discovery of gunpowder. The soldier will go on hitting, guarding, and moving. Without endurance he will be unnerved; without munitions and food he cannot fight, and surprise will remain for him his staunchest friend and most deadly foe.

Though the roots of future warfare are hidden in the past, the plant of war must be cultivated creatively. No stereotyped copying is likely to succeed. Victory is to be sought in the imagination.

## War-Making Powers

by CAPTAIN EDWARD J. ROXBURY, JR.

*Against the background of a United Nations action in Korea and truce team operations at several critical trouble spots in the world, the international body's legal structure for military action to preserve the peace is a matter of great interest. Can the UN order out forces against an aggressor?*

**I**N April 1945, with the flush of victory permeating the United Nations, a meeting was held in San Francisco to write the charter for a new world organization. This organization was to include all "peace-loving" nations of the world, and these nations were to work together to ensure the peace. This new world peace body was enthusiastically accepted by the majority of the people of the United States.

In 1919, President Wilson had brought back from Paris the covenant for a similar organization, boldly titled the League of Nations. This country had turned its back on it. There was no less a desire for universal peace than in 1945, but indifference born of the long war, suspicion of foreigners, a fear of commitments, and, perhaps most of all, domestic politics kept the United States out of the League of Nations. Senator Borah expressed a widely held view in a debate in the Senate concerning the approval of the League, when he said, "there are some things in this world more to be

desired than peace, and one of them is the unembarrassed and unhampered and untrammelled political independence of this republic. If peace cannot be had without our surrendering that freedom of action, then I am not for peace."

In 1919, rejection; in 1945, almost universal acceptance. A recital of the reasons for this change is neither necessary nor pertinent. But what is remarkable is that in either case acceptance or rejection by the majority of the people of the United States was largely based on the same misunderstanding of the role of these world bodies. The misconception as to the actual amount of power possessed by these organizations was the cause of this misunderstanding.

The League of Nations and the United Nations have been called "super-governments"; they have been likened to our Congress or the British Parliament. They have been characterized as law-making bodies which would impinge upon our sovereignty and lay down rules for the governing of the world. In both cases these definitions were to a great extent believed. This belief was a large factor in turning the United States away from the League of Nations in 1919. In 1945, perhaps believing that "un-

CAPTAIN EDWARD J. ROXBURY, JR., is a 1946 graduate of the U. S. Military Academy. He is attending Columbia University for a course in International Relations.

ARMOR—March-April, 1953

## of the UNITED NATIONS

embarrassed and unhampered and untrammelled political independence" was not quite so important as peace, we accepted the United Nations.

That either world organization was or is in any way a "super-government" or a law-making body is, of course, untrue.

The United Nations has had, however, a further burden of misunderstanding to bear. As the UN came into being the idea was prevalent that there also had been created within it a "world police force" made up of soldiers of all nations, or a multi-national army under United Nations control. Critics said that our Congress' prerogative of declaring war had been abdicated in favor of the Security Council. At best it was somehow felt that if called upon, the United States had to furnish troops to the United Nations. Confusion about the war-making power of the UN still exists today.

The League of Nations Covenant had done little more than hint that in case of dire need the members would band together militarily to enforce the peace. The United Nations Charter seems to go much further. Paragraph 1 of Article 43 says, "All Members of the United Nations, in order to contribute to the maintenance of international peace and security, undertake to make available to the Security Council, on its call and in accordance with a special agreement or agreements, armed forces assistance, and facilities, including rights of passage, necessary for the purpose of maintaining international peace and security." Article 47 creates for the use of the Security Council a Military Staff so it may properly use the military forces for the maintenance of peace and security—in effect, an United Nations army, navy, and air force.

This would seem to mean that the "world police force" was actually legally in existence. Each member should have available, on call, an

armed force which would perform at the bidding of the Security Council.

In Korea, there is every external manifestation of this force. The United Nations flag is used; the troops are called the United Nations Forces; the commanders are issuing orders as United Nations orders. The army there is multi-national and although the United States is furnishing the ranking officers, other nations are consulted on major decisions. Political decisions were commonly supposed even by members of the committee on Armed Services of the U. S. Senate to come from the UN itself. All outward aspects make the forces fighting in Korea appear to be an army fielded by, and under the command of, the United Nations.

### The Big Question

Can the UN order the United States and other nations to furnish troops to repel a new aggression if there is another breach of the peace similar to Korea? Does the United Nations, in other words, have any practical war-making power?

Actions of some members of the UN give us more than a hint of the answers to these questions. The dramatic refusal of Russia to do anything but hinder the avowed purposes of the fighting in Korea does not bring her dismissal from the UN. The failure of many nations, although friendly to our cause, to furnish troops or equipment to Korea has brought them no reprisals. These examples indicate that there must be some flaw in the assumption that the United Nations can order armies into action.

The flaw is to be found in the Charter of the UN itself and in the assumption, at the time of the writing of the Charter, of Big Power accord. If Article 43 is reread, the phrase "in accordance with special agreement or agreements" will be found. Paragraphs 2 and 3 of the article go on to explain what is meant

by this phrase. They are worded so that no nation is compelled to contribute armed forces to the United Nations unless they have made an agreement beforehand as to exactly what armed forces they are willing to allow it to use. In other words, before the UN can have an army, the separate nations must agree to give it one.

At no time, including the present, since the United Nations has been formed has any nation made any agreement to furnish any type of armed forces to the international body.

In all fairness to the Charter, it should be said that an article is included which was supposed to take care of the interim period between the signing of the Charter and the reaching of military agreements with the UN. But, this article, 106, again is based on Great Power cooperation, and consequently has had no useful function.

Actually, then, the UN has no practical war-making power at all, simply because it has no army.

In light of this, it is interesting to read the resolutions condemning the actions of the North Koreans as a breach of the peace and urging aid for the South Koreans, which were passed by the Security Council on June 25 and 27 of 1950. They very carefully use the words "calls upon" and "recommends" when trying to get nations to take action against the North Koreans. No stronger words could be used, for no members were compelled to obey. Suggestion was all the power the United Nations had.

Although it is evident that the United States and many other nations will voluntarily furnish forces to fight for the principles of the United Nations, the fact remains that, at the present time, the United Nations as a political body has no actual power of its own to mount an army in the field or to order any nation to do so.

ARMOR—March-April, 1953

# Tank Gunnery in Eastern Korea

by FIRST LIEUTENANT SETH WIARD, JR.

**L**ONG the eastern front in Korea, armor, distasteful as the thought may be, is cast in the role of front line artillery. Both in the Punchbowl sector and in the Mundung-ni Valley, the only movement of armor was onto and off the MLR.

In this entirely different part that armor has to play on this sector of the front, several little-thought-of difficulties were encountered and overcome. They should prove of interest to all Armor officers.

The absence of enemy armor activity on the eastern front leaves armor only bunkers, gun positions, trenches and small groups of enemy personnel as targets. Especially in the eastern section of the Punchbowl, tank targets are far beyond the accredited accurate range of the 76mm M1A2 mounted on the M4A3E8 tank with which this company is equipped.

## Effects of Temperature Variation

It was standard practice, on line, to keep 9 extra rounds of HE on the turret floor as a supplement to our basic load. When shooting at targets at a range of 4,000 yards or more, it was found that a definite increase of approximately 100 yards was necessary when we switched to ammunition from the turret wells. This was caused by the slightly lower temperature of the rounds in the wells as opposed to those lying on the turret floor. This lessening of range was especially noticeable whenever ammunition from our storage bunkers was used. It is suggested that, whenever possible, ammunition from a

common source be used to minimize correcting ranges due to temperature variation of shells. There are few occasions when this cannot be done with armor on the MLR. This factor of range variation is only applicable during the extremely hot months of June, July and August.

## Bunker Destruction

Probably the most frequent target that the tanker will be called upon to destroy is the bunker. In general all that can be observed of this kind of installation is a small aperture. Often this kind of target can be located only by observing personnel entering and leaving a certain area that may appear to be solely a group of bushes or small trees. For destruction of a target of this type it is recommended that, if one cannot see an aperture, the tank use HE to expose a side or an aperture, then place APC at the point about a yard below the center of the mass or aperture. This will crack the foundations and allow HE (delay) to clear out the walls and collapse the ceiling. If it is impossible to do this due to an extremely heavy construction, WP should be placed in the aperture for incendiary and anti-personnel effect.

The North Korean and Chinese forces have a habit of constructing numerous dummy bunkers, which are built solely to cause depletion of our ammunition supply. It has been found that the most effective way to deal with this sort of object is to damage the bunker, not to destroy it. After this has been accomplished, the subject bunker and all approaches should be kept under constant observation to check on any rebuilding or traffic into or out of it. If an appreciable amount of activity is noticed

in or around the bunker it should be dealt with as any other installation of that kind.

## HE—WP Variations

Although the firing tables of the 76mm gun state that the shells HE, M42A1, and Smoke, WP T13E2, are identical in so far as ballistics are concerned, this was not found to be true at long ranges in actual combat use. Adjustment of HE and WP proved that a definite range decrease was necessary to bring the WP to the point of HE impact. In firing at targets at a range of 3,000 yards or more it was necessary to decrease the range by 50 yards to place the WP on target. At targets within the normal effective range of the 76mm gun, this variation was not too noticeable, but as I stated before, the majority of our targets were beyond the accredited effective range.

## Indirect Tank Fire Adjustment

Replacements from the States were found to be generally unfamiliar with indirect fire adjustment. We were forced to train them on line in the use of the M9 Quadrant and the Azimuth Indicator. A knowledge of these instruments is indispensable inasmuch as the majority of adjustment was made by the platoon leader from a battalion or regimental observation post and the gunners were unable, in a large number of cases, to make an adjustment fine enough with their direct fire sights. It has been stressed in all gunnery training that a finer adjustment than 50 yards was impractical with the tank gun. When firing at OPs, which were usually placed on top of ridge lines, an adjustment of 25 yards or even less had to be made to insure a target hit. Many

times an adjustment of 50 yards would place the projectile over the ridge, while the strike of the projectile, if not increased, would be well below the target. These situations necessitated an addition of 25 yards or less to obtain a target hit.

## Concrete Piercing Fuses

Concrete piercing fuses were available to all platoons in the company and were used both in the Punchbowl and the Mundung-ni Valley. Contrary to popular opinion, the use of concrete piercing fuses does alter the ballistics of the M42A1 shell. Whenever we replaced the PD M48 fuse with the CP T105 fuse it was necessary to increase the range to obtain a target hit. A general rule of thumb that proved to be practical was to make the same adjustment as if we switched to APC with a muzzle velocity of 2600 FPS. As a check on my findings, I inquired of Lt. S. Randall of C Battery of the 21st AAA Battalion, how he observed the effect of the fuses. (We supply his 90mm gun with the CP T105 fuse.) He stated that he was forced to make approximately the same adjustment when firing this fuse. We only used this fuse against rock walls and concrete bunkers, due to the fact that it must strike a very hard object to detonate. When using these fuses the best results were obtained by first clearing all logs and dirt away from the object with HE. This was necessary due to the fact that the shell would tend to slow up before striking the actual concrete or rock and thus fail to strike hard enough to detonate.

## Dispersion Due to Overheating

Sustained firing at long ranges will have a noticeable effect upon the accuracy of the tank gun. Firing at over 3,000 yards, if continued past 15 rounds, will tend to become erratic and result in a waste of ammunition. The normal dispersion pattern was greatly elongated almost to the point of impracticability due to the overheating of the gun. A method that we devised that proved very effective was to use one tank to initially take the target under fire. As soon as the dispersion pattern became stretched so as to make adjustment impossible, a second tank that had been observing the firing would

## Quoteable Quotes

The following is a quotation from a recent address by Lt. Gen. Willis D. Cristenberger before the assembled officers of the staff and faculty of the Armored School:

"The Korean fighting is a special kind of war, and a very important one to us Americans.

"However, looking beyond Korea to possible action elsewhere, with a completely different situation, we anticipate that full weight will be given to the value of the armored division and combat command.

"We can see the urgent necessity for the hard-hitting, self-contained armored units that knifed their way across France and Germany.

"No American can doubt the combat effectiveness of our proven United States armored units of divisional size, or even an armored corps made up of Armor, Infantry, Artillery, Engineers and all service components, supported overhead by tactical air.

"They demonstrated their worth in World War II, and will do it again, if called into action.

"So while giving the fullest, possible accolade to the small tank units fighting so magnificently in Korea, we must not lose sight of their big brother, the armored division, and the proven wallop he carries.

"Both are essential to present-day American success at arms.

"And I personally will not be convinced that we are making the maximum use of armor, until we also organize Armored Corps."

"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.

"However, the mobile, armor-protected fire power of a tank, which provides the 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.

"Armor in division strength, incorporating all the technological advances which our industrial supremacy can provide, may be counted upon to make a decisive contribution to victory in any major conflict in the future.

"It has been conclusively proven that insofar as ground forces are concerned, Armor properly supported, is one of the most decisive combat arms, the battlefield has ever known."

take over the target. This tank would obtain the exact range from the first tank by radio and be able to place the first round close to the target. Of course, the rate at which the gun would overheat is entirely dependent upon the rate of fire, and individual platoon leaders would have to work that out for themselves.

## Tank Positions

In general, our tank positions were on the skyline in hull defilade and were not moved out of firing position, except for maintenance. This, of course, goes against basic armored doctrine almost 100%; however, a careful study of the reasons behind this and the advantages gained from so placing our tanks will, I believe, show that more is to be gained from this than is lost.

In the first place, by having our tanks on the skyline we thus throw upon the enemy the same problem that we encountered in shooting against their OPs. Any rounds that are short of our tanks will fall below them and cause no damage. Any overs will fall into the valley to our rear and will be impossible to adjust. When you couple this with the fact that our tanks can be firing back at the opposing gun within 3 or 4 rounds, one can see the advantages to this method.

Probably the strongest argument that I can advance in favor of leaving our tanks in firing position constantly is the rapidity with which we can engage targets of opportunity. On one occasion in the Mundung-ni Valley I was able to put an HE shell in the middle of a group of Chinese 35 seconds after they had been observed from the Regimental OP. No other weapon on the MLR can engage a target as rapidly and effectively as a tank.

## Adaptability of Armor

As many tank officers have realized, Korea is not particularly well suited to armor. However, if there are U. S. troops operating in any terrain, armor can operate in that country. It is true that we cannot operate in the manner that we would like to, but adaptability is one of the strong points of armor. In Korea, under adverse conditions, armor has again risen to the occasion and proved its indispensability as a member of the combat arms.

FIRST LIEUTENANT SETH WIARD, JR., is assigned to the Tank Company, 14th Infantry Regiment, 25th Infantry Division stationed in Korea.

**U**NIQUE in this unit's history, the Fordability School of the 1st Battalion, 14th Armored Cavalry, now stationed in Germany, has proved to be a lesson not only in fording but also in preparation for instruction. Fording is not well covered in standard Army publications and few training directives specify this subject in the unit training schedule. Yet, if armored units are to maintain their vital mobility, they must be capable of fording streams successfully and expeditiously at any time, and the source of capability is training.

Perceiving this, the Battalion Commander determined that his unit needed to expend some time and effort in this specialized type of training. However, presenting this instruction properly and completely requires a great deal of research and preparation and it was decided that the best approach to the problem was to set up a school which would present a one day course in the subject of fording. The school was to be organized and conducted by a staff officer, and school troops were readily available within the battalion. A suitable location for a demonstration could be found nearby.

I was the staff officer chosen and at the outset received one of the greatest aids in carrying out any of these odd job assignments; a specific, well-written directive. This two-page letter told me the type of thing that was wanted, some features which were desired, and gave me a deadline date. Although a first reading of this letter was enough to get me going, I was to refer to it again and again as a check sheet to assure myself that I was accomplishing what I had been ordered to do.

Since the first part of the course was to be a classroom conference, my first step was to research and prepare for this. I collected Technical Manuals for all the vehicles in the reconnaissance battalion, or likely to be assigned to the battalion in the future, plus anything else written which might be usable as an information source. There was not time to send

CAPTAIN RICHARD D. TRUE served in Europe during World II with the Third Army combat engineers. He was appointed to the Regular Army in 1949 and is now S2 of the 1st Battalion, 14th Armored Cavalry Regiment, stationed in Germany.

# FORDABILITY

by CAPTAIN RICHARD D. TRUE

*Mobile operations take armor over all kinds of terrain in all kinds of weather. Among the many obstacles encountered are natural and man-made watercourses, which must be crossed if armor is to keep rolling. Here is the first of a two-part article on the selection of sites and fording techniques for tanks and organic vehicles in a battalion fordability school*

to any of the service schools for whatever they might have to offer, but this source should not be overlooked in such preparations. After reading and extracting all that I found applicable, I determined that the outline for the course should be as follows:

1. Fording Capabilities of Reconnaissance Battalion Vehicles
2. Rivers and Streams, General
3. Rivers and Streams in the vicinity of the Battalion's Home Station
4. Characteristics of Fords
5. Selection of Fords:
  - a. From Maps
  - b. From Aerial Photographs
  - c. By Aerial Reconnaissance
  - d. By Ground Reconnaissance
6. Fording Operations

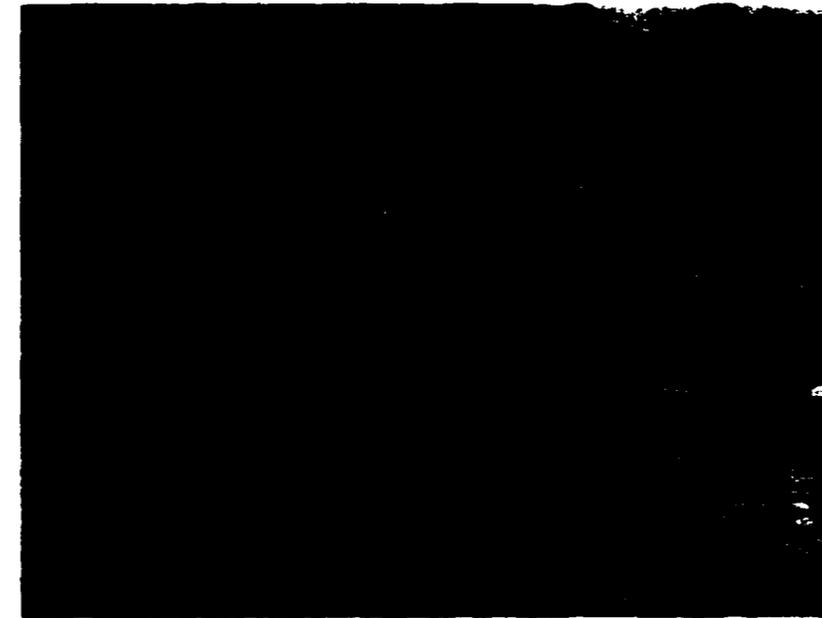
This was to be followed by a demonstration, which would show the fording capabilities under a variety of conditions of each of the vehicles assigned to the battalion, and would show, if possible, some of the things our vehicles could not do. Simultaneous with the writing of the instructor's manuscript, were the selection of a location for a demonstration and

preparations for it. The instructor's manuscript was prepared for use in the classroom and also to be handed out to anyone who wished it for his own use. Following are extracts from the manuscript which will be followed by a description of the preparations which went into the demonstration, and an account of the demonstration as it actually took place.

## Fording Capabilities

The fording capability of a vehicle is its ability to operate satisfactorily while traversing water and to continue to operate satisfactorily thereafter. Fording capabilities are based on several factors. The first is the total depth of water the vehicle can negotiate without drowning the engine. Second is its ability to run through the often muddy and difficult conditions of streams, banks and bottoms. Third is the ability of accessories and components of the engine and drive system to withstand the effects of submersion. Fourth is the provision for elimination of any water which may penetrate any of the various vehicle sub-assemblies, such as starter, generator, crankcase, clutch housing, differential, and so forth.

The fording depths of the vehicles



U. S. Army

currently assigned to the battalion and likely to be assigned in the foreseeable future are considerably improved over the World War II types, with the exception of the half track, which is a World War II vehicle. This has been accomplished by higher positioning of the carburetor air intakes, oil filler pipes and fans.\*

In addition to these increased depths, provisions have been made in the design and manufacture of the vehicles presently issued to make them more waterproof by sealing all or parts of assemblies which are immediately affected by immersion in water. Watertight housings are provided for all instruments, switches, starter, generator, regulator, battery vents, and the ignition system, including cables. The majority of these

\*A chart showing the heights of these points from ground level was included in the instructor's manuscript. Fording depth figures taken from the Technical Manuals were readily compiled into chart form for presentation. Two charts were prepared, one large one for classroom use and mimeographed copies for inclusion in the instructor's manuscript. Since we were dealing strictly with combat-operative vehicles, no consideration was given to the deep-water fording which encompasses the use of fording kits and special preparations.

parts require venting to prevent damage from condensation moisture within the housings, and a system of venting tubes is provided for that purpose. This system is general and is found throughout all wheeled and combat vehicles of recent production. The basic design of the vehicle, whether tracked, half tracked or wheeled; its weight, ground pressure and engine power determine its ability to pass over stream banks and over muddy stream bottoms and approaches.

Maintenance problems are increased in fording operations, in spite of the additional precautions against water taken in the manufacture. These problems are minimized if the vehicle is in good condition before fording and is properly adjusted and lubricated throughout, to include maximum filling of the brake system to reduce the entry of water. With the engine operating at maximum efficiency and proper after-fording maintenance carried out, fording will not hurt military vehicles. If the vehicle has been in the water an appreciable length of time, or has been completely submerged, immediate precautions must be taken to halt deterioration and avoid damage

to the engine and other parts. If water in any great amount has entered the engine the vehicle must be evacuated for overhaul.

After fording, all lubrication must be checked for evidence of water in any of the lubricants. If there is water, drain the lubricants, flush the assembly and add new oils or greases. Lubricate the chassis and repack wheel bearings. Bleed the brakes and add fluid as needed. Clean the carburetor bowl, fuel strainer and filter. If water has entered the fuel tank, drying of the tank, lines and pump is required. Open and thoroughly dry the distributor. Test the battery with a hydrometer and check for proper liquid level. Check all electrical connections for signs of corrosion, especially the bayonet type connectors used on many circuits. Clean the air cleaner and change the oil filter. Wet brakes are ineffective and should be dried at once after leaving the ford by applying them several times before they are needed. The heat thus generated will dry the brakes. Occasional grabbing may result from soaking of brake linings but should occur only once or twice.

Precautions must be taken to prevent immersion of optical equipment on tanks, except periscopes used for driving. In addition to being highly damaging to the interiors of these delicate instruments, any cleaning or drying of their interiors is an Ordnance job and involves loss of the item to the unit for a period of time. Tank ammunition, being stored low in the hull, is subject to immersion if the tank is in the water long. A brief wetting will not hurt it but it should be removed from the tank and wiped dry as soon as possible. Some rounds which have been in the tank for some time may have projectiles loosened by vibration; this will allow water to seep into the powder case. Check for this and replace any that show evidence of wet powder. Small arms ammunition, in cans, will not get wet in fording unless the can is defective. Check for water in the cans after immersion and dry any ammunition that is wet.

## Rivers and Streams

Knowing the characteristics of rivers, streams and other water channels is an aid to prediction and selection of fords. Certain generalizations can

be made concerning both natural and man-made waterways, to which may be applied the several means of selection of possible ford sites.

First, in considering man-made channels, the following characteristics are generally true: (1) They are straight (2) They are of uniform depth (3) The banks are uniform and steep to vertical, depending upon the type of erosion control which is established, i.e., masonry, loose rock, retaining walls, brush mats, and so forth. Usually a man-made channel will be narrower, deeper, and have swifter current than natural channels, except those leading to millwheels, which will be slow near the mill.

Natural streams are not uniform in any of the above aspects, and thus are distinguished from man-made channels. Many natural streams which pass through populated areas have been improved, and may exhibit one or more characteristics of man-made streams. On the map, the natural channel will be distinguished by its irregular course which is very closely related to the surrounding relief pattern. They are, of course, much more common than man-made streams, and therefore are of greater interest in selection of fords.

Natural streams vary in size from mere trickles to the biggest rivers. Most are shown on topographic maps, including intermittent streams which are not full the year round. The types of banks and bottoms of streams depend on the ground they are passing through. The vegetation of the banks and bottoms depends on the climate and local conditions. The amount of water in all streams is seasonal and depends upon the amount of water precipitated and running off the hills.

Streams draining hilly country are usually fast-running, with low, steep banks and rocky bottoms. These tend to run to numbers of small streams rather than few large ones. Many run in narrow V-shaped valleys, and many run directly through the woods. On reaching relatively level ground, the small streams join to form larger, slower streams. In the lower ends of the mountain valleys the streams will still have considerable velocity, and stream beds will usually be gravelly, but the surrounding land is wet and boggy, due to percolating water, which has seeped down from the hills. Few roads run across the streams

at these places, the roads tending to follow the streams along the sides of valleys rather than across them.

Upon reaching the floors of the major valleys, the streams slow up and deposit silt. Most of the flat land along the larger valley bottoms is silt which was laid down by the streams during the preceding centuries. Here will be found muddy bottoms, the mud being inversely proportional to the speed of the water, and directly proportional to sloughing off of the banks. More bank growth can be expected in warmer valleys. Where the fall is moderate, the streams start to meander, and develop steep, high banks. Where the stream banks are low and the stream not yet large, a braided channel often develops in which the stream actually flows through many intertwining channels, which keep the valley floor wet the year round. In most braided channel areas the water is fast moving and brushy banks are common. Where the stream passes from the braided channel, swift stage, into the broad winding channel, the real change from stream to river takes place. This, however, is not true of rivers which flow at some elevation, through rugged, mountainous country, for they often become large very rapidly, and flow swiftly over rock bottoms for much of their length.

In examining a river channel, such things as difference in bank height and slope, depth, speed, bottom composition, brushiness, and approaches affect the selection of fords. Where the stream meanders, the current is slow and the water fairly deep. The banks will, in many cases, be high, of clay or silt, and very steep. Cutting away of the soft banks by the water leads to caving or sloughing off of the banks leaving a sharp upper rim on the bank and a pile of mud at the water line. This pile of mud will extend into the water, and create a very muddy condition near the banks. The center of the channel will be the deepest place, in this case.

Where rivers curve, the banks will not have similar characteristics. On the inside of the curve the bank will be lower and sloping, the more gentle slant extending down into the stream bottom. On the outside of the curve the bank will be vertical or very steep. This is caused by erosion of the banks at the water line, by im-

pect of the water, subsequent caving of the bank, and piling of the earth at and under the water line. In this case the deepest part of the stream will be about two-fifths of the way from the higher bank. The pile of mud under the steep bank is a real obstacle to the exit of vehicles from that side, as in the steep bank itself. Usually the sloping inside bank will have higher gravel content than the steep outside. Vehicles can enter streams over the high bank, and exit from the lower bank. This indicates that in selection of possible ford sites, look for fairly broad curves, the outside of which are in the direction from which the troops will enter the ford.

Rapids or ripples in the water indicate shallow spots, and will usually have a more rocky or gravelly bottom composition. The faster water running in these places does not deposit silt as slow moving water does, resulting in the firmer bottom. Also where rivers skirt hills, particularly along the inside of a curve in the hill, rocky bottoms will be found, in many cases the rock being of such size as to prevent vehicles crossing. This is due to the cutting away of the hill by the stream which allows large chunks of the rock which makes up the hill to fall into the stream. Until these rocks are eroded by water action and rolled downstream, they remain on the bottom as obstacles to crossing. In most cases there will not be sufficient room to allow approach to the stream except from the low side. In extreme cases it may be possible to enter the stream from the hillside directly and exit the low side, if the hillside is not too steep.

Smaller streams are more likely to have rocky bottoms than are rivers. They usually run faster, twist and turn a great deal, and have not yet reached the stage where they occupy flat-floored, open valleys. The scrub bank growth will often be thicker along these streams, as the bank erosion is less than the rivers, and there has been more of a thicker built up. The banks, often grassy down to the water's edge, are rounding as the water is approached, and then drop sharply. While these banks are not high, their abrupt sharpness will cause trouble to wheeled vehicles.

Weeds, grasses, moss, and reeds grow in stream bottoms at various

places, depending on the speed of the current, the composition of the bottom, and the climate through which the stream section flows. In the swifter mountain streams, moss and lichens are the main bottom growth, with some grass near the banks. As the streams slow and develop muddier bottoms, the amount of grasses and underwater weeds increases, nearly choking the channel in some places. This growth is seasonal but much of it remains throughout the year. In the flat areas through which the streams run, reeds and bulrushes grow from the stream bottoms near the banks, being indicative of fairly slow currents. Willows and alders are the most common wood growth along the stream banks.

#### Characteristics of Fords

The first consideration in a ford is whether or not the water is too deep for the vehicles which must pass through it. Assuming that the water is not too deep, there are certain other considerations which make a ford good or bad. The banks, bottom and approach to a ford are more likely to affect its usability than the water depth, in the majority of streams. Banks must be low enough to permit entry and exit from the water, and solid enough to hold the traffic which will pass across them. A ford may be entered over a steeper, higher bank than the one over which exit will be made. Consideration must also be given to the fact that water will be carried out of the stream, onto the bank, by the vehicles as they cross. Where the first vehicles pass easily, the last may not. The bottom of the ford must be solid enough to bear the traffic as well. The rule on this is, the rockier the bottom, the more it will bear. However, extreme rockiness featuring great boulders is as much an obstacle as a pure mud bottom, and a middle ground must be met. A way to the ford and a way from it must be located if a ford is to be used. Of course, roads are ideal, but any land that can be traversed is usable. Swamps, steep hills, dense woods, ditches, and other obstacles must be avoided.

The ideal ford, then, is a shallow place, with the water moving slowly, approached from both sides by trafficable roads, low, gently sloping banks, passable at the deepest part

by the smallest vehicle in the unit, and with smooth bottom of solid gravel, free from ruts and holes. Due to natural phenomena, this is not likely to be found in all its aspects. If it is, it will be due to some work of man.

When determining a ford's worth, differences in the vehicles which are to use it must be considered. The fording depth of the various vehicles and their ability to get through are different and the ford must be selected for the weakest of the vehicles unless they are to be helped through. For example, a ford which is not usable to a 1/4-ton because of depth, is usable to a 2 1/2-ton truck. A ford that has too steep a bank for wheeled vehicles is usable to a tank or other tracked vehicle.

In making a ford selection, consider the platoon as the fording unit and select the ford on the platoon's fording capabilities. Medium tanks can get through any place that a reconnaissance platoon can and many that they cannot. Again, each vehicle may not be required to cross alone and unaided. Tanks can tow jeeps and other vehicles across and trucks may use winches to aid the crossing. Hasty pioneer work can improve fords by cutting down banks and laying brush mats to reinforce bottoms. Application of initiative and work can get a platoon across any reasonable place, but the objective is to select fords which do not delay.

#### Selection of Fords From Maps

Maps, being graphic representations of the earth's surface, will show streams quite prominently, since they are distinguishing terrain features. They stand out particularly well on those maps which are printed in color. From the usual information which is printed on maps, a good indication as to the likeliest fording spots can be derived.

However, maps have a good many limitations in their employment for the purpose of selecting fords. They cannot be considered as final information sources in selection of fords, one or more of the other means being necessary supplements to the map selection. Of course, selection of fords from maps, aerial photographs or by aerial reconnaissance should all be considered as supplementary or preliminary to selection on the ground

by actually going there. Even then the final proof of the ford is passing the vehicles through it successfully.

While most maps attempt to show the streams graphically as to width, they do not show depth nor do they show condition of the banks. Only in the case of appreciable woods at the water's edge do they show bank growth. Speed of the current and condition of the bottom also are not given in map information. Important items which are shown are the approaches. Roads and swampy areas are shown and this information taken from maps is very useful in making the initial selection, as well as woods and hills which must be considered.

In view of these limitations the map should be approached with caution, and final decisions as to fording not made from them. A possible exception to this is in the case where an existing ford is shown on the map. Usually where a ford is shown it will be usable during normal or lower water levels and may have been improved at some time, to increase its trafficability, by addition of stone or gravel to the banks and bottom.

The scale of a map which should be employed will in many cases be the result of using what is available. Normally the larger the scale of a map, the more detail will be shown on it. Therefore the 1:25,000 scale should tell the most about a stream. The 1:25,000 maps which are issued in Germany at the present time are compiled from older German maps and are quite detailed. However, they are not printed in all colors found on U. S. maps and hence are not as graphic as the U. S. maps. Where the streams are shown in blue they can easily be picked out. In addition, widths are well shown on these maps as well as the many minor streams which are incident to the main streams. Ditching, swamp, relief, and roads, including minor trails, are well shown on the 1:25,000 map. It takes more sheets of this scale to cover a section of stream than of smaller scales, involving a problem of storage, issue, transportation, and use.

The next most detailed scale of maps which are available at present are the 1:50,000's. These are printed, in most cases, in five colors, and show quite well the stream channels and other details mentioned above, including the swamps and minor

streams and some ditching along the main streams. Widths of the streams are also shown graphically but an actual measurement of a stream width from a map would not be accurate, the width shown being largely relative rather than to scale. Considerable detail as to positioning of the stream is found on this scale map, multiple channels and mill diversion channels showing up quite well.

In the 1:100,000 map, a great deal of detail is lost in the saving of space and diminishing size of ground objects. However the up-to-date maps of this scale are accurate as to positioning of the streams and will show where the main stream runs in multiple channels. Most of the incidental streams which are not in themselves main streams will not be shown, nor will ditching and such minor drainage works usually appear, unless it amounts to a considerable project. Estimation of stream widths from the map is of low accuracy on the 1:100,000, since in order to show up well on the map, a blue line of some width must be printed and many streams will appear wider on the map than they actually are on the ground. This is also true of the 1:50,000 maps.

In making the initial selection from the map, scan the stream line, noting unusual features, multiple channels, meandering stream sections, swampy areas, approach roads, woods and relief. Reject as having unsuitable ap-



An M47 emerges over a medium steep bank. Later tanks would hit more mud. U.S. Army

proaches places where the stream runs along a steep hillside and through swampy areas. Where the stream runs in a braided multiple channel, the ground will be wet and soft, and should be avoided. Where the stream meanders, leaving old channel sections and oxbow lakes, the banks will be steep and high, so reject these places. Select places where the stream runs straight, in one channel, and where it is not backed up behind a mill dam. These should be the most likely places for fords. Next select places where the outside bank of a curve can be approached; and third, where the stream runs in two channels, separated by some distance.

Once the initial map selection has been made, time should be spent in applying one or more of the other methods of ford selection, all of which should lead to a ground check. This is the only conclusive way of making a ford selection, and proof of the ford lies only in placing it into use.

#### Selection of Fords From Aerial Photographs

Aerial photographs offer several advantages over maps in the initial selection of fords. They are: (1) large scale. Most aerial photographs issued for tactical use are around 1:10,000 scale, which is large enough to show considerable ground detail. (2) Recency. It is usually possible to obtain photographic coverage which is much

more recent than the latest map revisions. In operations, photography is available within 72 hours after it is flown. (3) Detail. Being an actual picture of the ground, photographs show the terrain as it actually is. Even to a person not especially trained in the interpretation of aerial photographs, large scale photography will graphically give a wealth of information concerning the terrain. To a trained photo interpreter, measurements of surprising accuracy may be made of objects and features on the ground, including height and slope of stream banks and stream widths; probable shallow spots are discernible. The surrounding road and trail net is well shown on air photos and trafficability of the soils is indicated.

To select a ford from aerial photographs, the first requisite is recent coverage of appropriate scale, 1:10,000 or larger, taken at a time when water levels are normal, or the same as they will be at the time when fording is undertaken. Lay up a loose strip mosaic of the stream coverage, and by scanning, select likely looking spots for fords. Look for spots where the river abruptly widens for short distances, with light patches on the banks. These are existing fords which are also indicated by roads leading away from the banks directly opposite each other with no bridge over the stream.

Closely examine the ford sites selected, looking for all the requisites. To the naked eye, sloping banks, steep banks, high banks, back-up from mill dams, multiple channels, bogs and swamps and the approaches to the fords are all quite discernible. Large, dark patches on the approach fields are wet. If it is possible to use stereo vision or magnification, so much the better; a great deal more can be learned by applying them but they are not a vital necessity.

Shadows will indicate trees and brush lines. A line of shadow on the water will give a clue to the height of the bank. A thin hard line at the stream edge indicates steep banks. A broader white bank line with a sharp upper edge indicates steep clay banks which are sloughing off into the water. If the stream meanders through this type bank, the banks are probably high. This type of bank is also found on the outside of curves in areas where the stream flows through

flat valley floors. A very soft line or simple change in tone from the water to the land indicates low rounding banks.

#### Selection of Fords By Aerial Reconnaissance

Selection of fording sites from liaison aircraft is effective and practical. It offers the advantage of covering great distances in the shortest possible time, plus giving the observer a wide view of the ford and its surrounding area. Present-day light aircraft also have the capability of flying low and slowly enough that a fair amount of detail may be seen. Disadvantages of this method are the weather limitations on flying the airplane and upon visibility in general. Also the speed of the aircraft and the distance it must remain above the ground limit the accuracy of observation.

In making an aerial reconnaissance for a ford the first step is to make a map reconnaissance of the sector to be covered, planning the flight in sufficient detail that time is not wasted in flying aimlessly around in getting oriented. From the map it is possible to select areas which are more likely to be fordable than others, or at least to eliminate those sections where fording is probably not possible. This stage of the planned reconnaissance should be worked out with the pilot, who will give valuable assistance in planning the flight.

For this use the 1:50,000 map is very good in that it shows considerable ground detail. If the flight is to cover much territory this map is less satisfactory because so many sheets are needed and handling a lot of maps inside an airplane in flight is frustrating. Therefore a map reconnaissance from a 1:50,000 or larger scale and use of a 1:100,000 map in the airplane is a good solution to the problem.

Fly along the selected streams, off to one side, at about 200-300 foot altitudes, marking likely looking fords on the map at the first pass over. Double back and "drag" the previously selected locations. This consists of flying low and slowly circling the ford, scrutinizing it carefully, noting all the details of the approaches, banks, speed of the water flow and the depth. It is quite possible to estimate the depth of the water since

the observer is directly over it and can tell by the clarity with which the bottom may be seen, the relative depth of the water. For this purpose it is best that the flight be made in the middle of the day when the sun is highest and the light penetrates the water to the maximum.

Certain fords, first selected, will be eliminated by this closer inspection from low altitude, and the remainder confirmed. Before leaving the area it is a good idea to fly higher and evaluate the surrounding terrain. Especially important is the relationship of the ford to the existing road net as shown on the map. Certain fords may be set aside as being too isolated to be of immediate importance. On the other hand new roads and usable trails which do not show on the map may be discovered near the fords and this is useful as terrain information in any case.

This type of deliberate reconnaissance is usually feasible only when there is time to carry it out. In operations, selection of fords for use by friendly troops is controlled by the unit's position on the ground and by the time at which they will need to use the ford. Because of the capability of the platoon to communicate directly with the airplane it is possible for the platoon leader to request an advance reconnaissance for a ford site and be directed to it from the air. In this case the platoon making the request must advise the pilot or observer of the approximate locality in which he expects to reach the river line, and the time. The pilot can then drag the river and report fording possibilities to the platoon. Existing fords are readily discernible from the air, even at altitudes over 1000 feet, if visibility is good.

#### Selection of Fords By Ground Reconnaissance

In selection of fords by ground reconnaissance, the slowest and surest method is employed. Where aerial reconnaissance can cover miles while ground reconnaissance is covering yards, and aerial photography can place a picture of the ground in the hands of the reconnaissance leader, neither of them can provide the close look at the ground that actually being there affords.

Again the first step is a map reconnaissance. This will save time by lim-

iting the search to areas of probability. If no fords are found where anticipated from map study, then the areas first rejected must be checked, for as stated above, a map is not a final authority in making ford selections.

In evaluating streams for fordability, the presence of diversion channels for millwheels and dams which back up water behind the mill are important features, since the stream is wider, deeper and will have a muddier bottom behind the dam where the water is relatively still. In addition, the diversion canal is usually deliberately dug and features a deep narrow channel with steep banks. It is usually harder to cross these short canals than the stream proper because of these characteristics, and in any case they should be avoided since they require two crossings instead of one. On the other hand, where the main stream is too deep to cross, splitting the water into two channels may divide it in such a way that they may be crossed individually.

If possible approach the stream from high ground. This gives an overhead view of the stream and approaches. From the point of vantage, select the most likely looking spots for fords. Look for rapids and ripples, as this denotes shallow spots. Look for low banks, clear of brush, and for a way to approach and leave the stream. Note also the presence of trees to be used as holdfasts in case winching is necessary and for materials to be used in hasty pioneer work if it is necessary to improve the ford.

If there is no point of vantage from which a view of the ford may be obtained then move directly to the river line and proceed along the banks in so far as possible. As the likely looking spots are located, examine each carefully, noting the water depth, flow, character of the banks and bottom. If possible test the ford by actually driving through it before sending the troops across. Ascertain whether the banks and bottom will bear all the vehicles which will pass over them, as well as whether the approaches will bear the traffic. Select the best ford and one or two alternate fords. Keep in mind and estimate the effects of an unexpected rise in water level if one should occur.

To be concluded

## Armored Division Association Conventions for 1953 Announced

Many requests for publicity announcements regarding various Armored Division Association conventions for 1953 have been received. So far, the following announcements are firm and are published herewith for information of former or present members of the various Armored Divisions:

The First Armored Division Association meets at the Shoreham Hotel, Washington, D. C., 28-30 August. For further information contact the Association at 1529-18th St., N.W., Washington, D. C.

The Third Armored Division Association will convene at Milwaukee, Wisconsin, at the Hotel Schroeder, during the period of 23-25 July. For details contact the Association at 80 Federal Street, Boston 10, Massachusetts.

The Fourth Armored Division Association will hold its 7th annual reunion at the Bellevue-Stratford Hotel, Philadelphia, Pennsylvania, during the period of 18-20 June. For further information contact the Fourth Armored Division Association, P. O. Box 247, Madison Square Station, New York 10, New York.

The Eighth Armored Division Association will convene at the Bellevue-Stratford Hotel, Philadelphia, Pennsylvania, during 3-5 July. Details may be obtained by writing the Association President, Mr. Henry B. Rothenberg, Room 1008, 33 North LaSalle Street, Chicago 2, Illinois.

The Tenth Armored Division Association will hold their annual roundup at the Hotel Washington, Washington,

D. C., 22-24 May. For further information you may write to Mr. Sidney Charik, 1511-20th Street, N.W., Washington 6, D. C.

## A New Tank Recovery Vehicle

Production of a new tank recovery vehicle is planned for the Chrysler Detroit Tank Plant as soon as engineering work has been completed. Mr. Thomas F. Marrow, Works Manager of the Chrysler Detroit Tank Plant, said details of the new tanklike vehicle were classified, but that Chrysler's Central Engineering Division had been assigned the engineering project by the U. S. Ordnance Corps.

Mr. Marrow said the Chrysler Detroit Tank Plant with the new field service and development work and a contemplated tank modification program will remain "the nucleus of tank manufacturing 'know-how' for years to come."

Chrysler Corporation took over, at the request of the Ordnance Corps, the manufacturing and assembly operations at the Detroit Tank Plant last July.

"The Chrysler Detroit Tank Plant has successfully put into effect the stretch-out program that it was given in early December by the Ordnance Corps," Mr. Marrow said.

He added that the stretch-out was accomplished with no decrease in personnel because of the added responsibilities the Ordnance Corps had assigned to the plant.

Mr. Marrow said total tank production was classified, but did disclose that more than 27,000 tanks had been built or modified by Chrysler during World War II and the present emergency.

## Chrysler Breaks Ground for New Tank Plant

Ground was broken recently for construction of a \$3,100,000 government-owned plant which the Department of the Army had previously announced would be built and operated by Chrysler Corporation for modification and final processing of military tanks for Army Ordnance.

The new plant, which has been designated by Chrysler as the Corporation's Delaware Tank Depot, will be located on an 87-acre site directly adjoining the manufacturing operations of the Chrysler Delaware Tank Plant, at Newark, Delaware and will function as an integral part of that facility.

Officials of the U. S. Army Ordnance Corps in Washington, Philadelphia and Detroit joined Mr. Robert T. Keller, General Manager of Chrysler Corporation's Tank Operations, and Joseph F. Kerrigan, Works Manager of the Chrysler Delaware Tank Plant, in the ground breaking ceremonies.

Construction of the Chrysler Delaware Tank Plant was begun two years ago and it is now producing, in volume, the Army's newest medium tank, the Patton 48. It has been revealed that in the near future the plant will begin production of the Army's first production type heavy tank, the T-43. This new Chrysler-built heavy tank, mounting a 120-millimeter gun, has been called the U. S. counterpart of Russia's Joseph Stalin III, of 57 tons.

The Army stated that the new plant would be used to "incorporate new engineering developments which may be applicable to tanks that have already been built. In the new facility, tanks made by Chrysler will also be processed for direct shipment to the field so that they arrive ready for Army service."

It is anticipated that the new plant, measuring 400 x 380 feet and thus providing 152,000 sq. ft. of floor space, will be in operation late this year. It is estimated that eventually approximately 400 persons may be employed there.

## Uncle Sam Saves Money

A saving of more than \$620,000 for the United States Government, through new lower prices on vision blocks for tanks, as a result of improved manufacturing techniques and economy in manufacture was announced recently by Libbey-Owens-Ford Glass Company.

G. P. MacNichol, Jr., executive vice president, in announcing the new prices said it had been the policy of the company, developed during World War II, to initiate voluntary reduction of prices

## TOP COMMAND CHANGE



U.S. Army  
Lt. Gen. Manton S. Eddy  
To retirement



U.S. Army  
Lt. Gen. Charles L. Bolte  
To Commander-in-Chief, USAREUR



U.S. Army  
Gen. James A. Van Fleet  
Back from Korea

on defense products whenever cost reductions justified them.

"We have tried to keep prices to the government, as to other customers, just and fair," said Mr. MacNichol.

Vision blocks are a special product of several thicknesses of plate glass laminated together and so shaped as to give a prism effect, so as to protect tank personnel when looking out of a closed tank when in action.

Twelve customers with shops and arsenals located in nine states have received these voluntary price reductions.

## Our Allies are Spread Far and Wide

Nearly all combatant units of the British Regular Army are serving overseas. Two-thirds of the married personnel in the Army are separated from their families by this service abroad.

"Never before in peacetime has there been such a high proportion of the British Army overseas," said Britain's War Minister, Mr. Anthony Head, recently. "Of the 20,000 men now in the British Commonwealth Division in Korea, some 10,000 are from the United Kingdom." In addition a British fleet and a small number of R.A.F. units are serving in Korean waters.

A considerable proportion of the Army is serving in the Far East under active service or near active service conditions. There are 25,000 soldiers fighting the Communists in the jungles of Malay, and another 11,000 guarding the strategic base of Hong Kong.

Out of the 11½-division strength of the Army, five divisions are serving on the continent of Europe. The island of Britain itself has almost been denuded of trained troops. Plans for the coming months are that 334,300 men shall serve in Europe, including the United Kingdom, and 200,300 in garrisons outside Europe. Britain is responsible for guarding 19 centers throughout the

world, such as Gibraltar, Malta and Suez.

Regarding efficiency "things are tough, and getting tougher," said Mr. Head in the same statement. "But so are we."

The British Army today is at a peacetime high level in fire power, trained manpower and new inventions. Latest developments include a recoilless antitank gun to replace the old 17-pounder. This is described by Mr. Head as "probably the most powerful in the world." A tiny but effective 21-oz. antitank grenade, which can be fired from the standard service rifle, has also been developed for the foot soldier. Its destructive capacity is equal to that of the most powerful infantry antitank gun used in World War II.

During the coming financial year, Britain will step up her spending on research for the Armed Forces by 40% to 100 million pounds sterling. Research will center on new weapons such as guided missiles, aircraft catapults, new types of aircraft. This sum does not include atomic research.

The application of atomic weapons to land-air battle is one of the chief problems now engaging the attention of the British Army, according to Sir John Harding, Chief of the Imperial General Staff. An exercise will be held at Camberley Staff College this summer to study this and other military questions.

The British Army in Germany has several teams of atomic experts advising it on atomic warfare, General Sir Richard Gale, Commander-in-Chief of the Rhine Army, disclosed recently. (Last October Britain exploded her first atom weapon.)

The new crescent-winged Vulcan jet-bomber is designed to carry the atom bomb. Atom-propelled submarines are now in the experimental stage, and plans for a prototype atomic pile suitable for marine propulsion are well-advanced.

## TO RETIREMENT

On March 31, 1953, General James A. Van Fleet retired from the Army, completing almost 38 years of exceptionally distinguished commissioned service. Graduating from West Point in 1915, he was commissioned in the Infantry. In World War I he went to France with the 6th Division and soon assumed command of the 17th Machine Gun Battalion. Between World Wars he attended the usual military schools and served as instructor at several colleges. In addition to his military duties, he became head football coach at the University of Florida. At the start of World War II, General Van Fleet commanded the 8th Infantry regiment, taking this unit to the ETO in January, 1944, spearheading the landing of the 4th Infantry Division on Utah Beach on D-day. General Van Fleet became Assistant Division Commander of the 2d Infantry Division, Division Commander of the 4th Infantry Division, later transferred to the 90th Division. He was appointed Corps Commander of the XXIII Corps and later transferred to the III Corps where he commanded the breakout from the Remagen bridgehead. His key assignments after World War II were Director of Joint U. S. Military Advisory and Planning Group to Greece; Commanding General, Second Army; and his last assignment, Commanding General, Eighth Army. A recipient of three purple hearts, he has been fondly called by those who served under him. "A fighting general." Upon the eve of his retirement, at a West Point anniversary dinner in New York, General Van Fleet, the most recently returned senior commander from the Korean battlefield, decried the system which necessitates the sending of inexperienced junior officers to the battlefield. At the same time he lauded the value of the battle hardened non-commissioned officers.

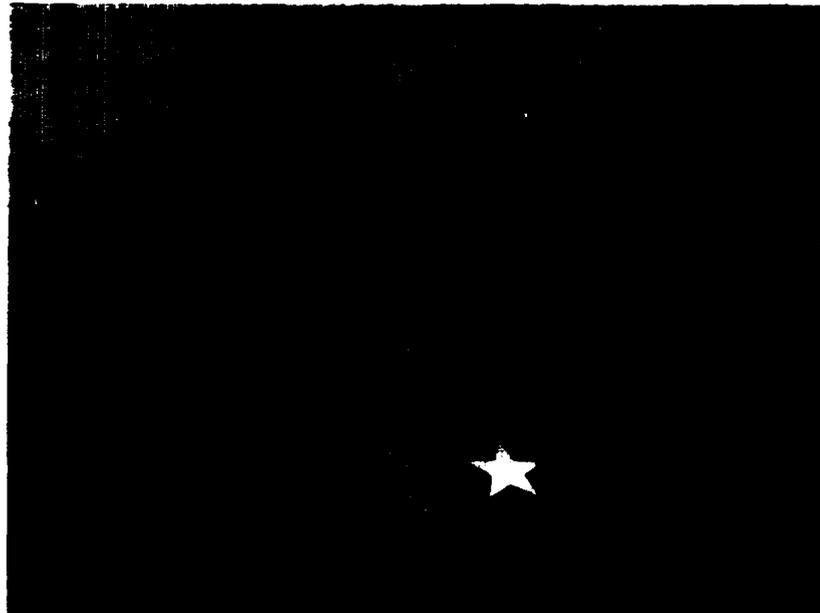
Official ceremonies were tendered General Van Fleet at Ft. McNair, Washington, D. C., on the last day of March.



With World  
Gerd Von Rundstedt (1952)  
Germany's former Field Marshal dies.



With World  
Marshal Vasily Sokolovsky  
New Soviet Chief of Staff



United Press  
These Sherman tanks attract everyone's attention as they rumble through a suburb of Tokyo. The new tanks are being used in training by Japan's National Safety Corps which has a strength equivalent to several Army Divisions.

#### Korean Campaigns

General Orders No. 93, 22 October 1952, named the following Korean Operations in the list of battles and campaigns of the United States Army: (All combat zones are the territorial limits of Korea and adjacent waters)

1. UN defensive—27 June to 15 Sep. 1950 incl.
2. UN offensive—16 Sep. to 2 Nov. 1950 incl.
3. CCF intervention—3 Nov. 1950 to 24 Jan. 1951 incl.
4. First UN counter offensive—25 Jan. to 21 April, 1951.
5. CCF spring offensive—22 April to 8 July 1951 incl.
6. UN summer-fall offensive—9 July to 27 Nov. 51 incl.
7. Second Korean winter—28 Nov. 51 to 30 April 52 incl.
8. Korea summer-fall 1952—1 May to 30 Nov. 52 incl.

#### Washington Chapter of U. S. Armor Association Meets

A get-together of officers assigned in the Washington area interested in Armor and mobile warfare has been planned at the Fort McNair Officers' Club for the 17th of April, 1953. The meeting will open with dinner at 7 P.M. and the evening program will feature several speakers who are exponents in the Armor field. The total cost will be approximately \$4.50 and it is estimated that more than a hundred officers will turn out for the occasion. Officers who are interested may make further inquiry by telephoning Captain C. R. McFadden, JAckson 7-9400, extension 409.

#### Stress the Fundamentals!

Major General Bruce C. Clarke, commanding general of the 1st Armored Division and Fort Hood, and Lieutenant Colonel M. G. Roseborough, former chief of staff of the 1st Armored Division, returned recently from a month long trip to Japan and Korea. The purpose of the trip was to observe units in action and conditions in Korea with

a view to improving the training of individuals destined for duty in that theater.

In traveling the front lines from coast to coast and the rear areas from Pusan to the front lines, they conferred with commanders at all levels and talked to the men in the trenches and bunkers on the front lines and in the training, supply and support installations in the rear areas. Included among these were many officers and men who were former members of the 1st Armored Division at Fort Hood.

The answers to questions regarding the improvement of stateside training added up to an increased emphasis on basic fundamentals such as driving, shooting, maintenance, map reading, scouting and patrolling, field fortifications, field sanitation and first aid, supply economy, camouflage and concealment, and the other basic subjects now included in Army Training Programs in use at Fort Hood and other training divisions. All reported that had they the opportunity to do it over again they would apply themselves even more diligently as students and instructors with a view to being better soldiers and leaders in Korea, for, in the final analysis, it is the poorly trained soldiers who are the most apt to become casualties. It was apparent that thorough training pays big dividends in a shooting war.

#### New Corps Armor Officer

Major Raymond W. Weeks has been assigned as Corps Armor Officer, G3 Section, with X Corps Headquarters in Korea. This was recently announced by X Corps Headquarters.

#### NEW AMPHIBIOUS VEHICLE



The Army's new 60-ton BARC, an amphibious cargo vehicle, was unveiled at a recent demonstration at Fort Lawton, Washington. Dwarfing the amphibious DUKW, the BARC can transport heavy items of military equipment, including a medium tank, and put them ashore over a beach, to unload for combat action.

## Armored Infantry Battalion Organization

by FIRST LIEUTENANT CHARLES P. NIXON

**I**N the postwar period several conferences have been held at several of our service schools and much study has been centered upon the Tables of Organization and Equipment for divisions and their organic units. However, these changes did not materially affect the organization of the Armored Infantry Battalion which I believe has been badly neglected.

The Armored Infantry Battalion operates today on a 1948 Table of Organization and Equipment under which I feel it would be ill prepared to adequately perform its mission in a mobile war.

I would like to analyze the present battalion T/O&E and make some suggestions in line with what I think would be improvements:

The Armored Infantry Battalion has four armored infantry companies and a headquarters and service company. The latter includes battalion headquarters, company headquarters, a headquarters platoon, a supply platoon, a reconnaissance platoon, a mortar platoon, a maintenance platoon, an administrative and personnel section and a counterfire squad.

The armored infantry company includes three rifle platoons of three rifle squads each; a light machine gun squad; and one weapon platoon with three 60mm mortars.

It will be apparent at once that the battalion has no defensive weapons to fight enemy armor other than its rocket launchers, which are comparatively short range weapons.

Since the separate battalion may on occasion be employed without

armor support or in a supporting role with units lacking armor, the need for an effective antitank weapon becomes important.

It is my opinion that the answer lies in a change which will permit the addition of a type of assault gun, or SP, to the existing organization of the battalion; a fast, highly maneuverable tracked vehicle mounting a high velocity gun and with the primary mission of killing tanks.

Do we have such a weapon? The M19A1 mounting the twin 40mm AA guns is too light in armor and armament. The 155mm mounted on the M40 is too heavy. The appropriate thing would be a 90mm SP, using the M19A1 chassis.

A company of four or six of these antitank weapons would be especially useful to the Armored Infantry Battalion attached, as is the case here in Germany, to the Corps light armored cavalry regiment.

Turning now to the battalion mortar platoon, which has three 81mm mortars mounted in half-tracks, although full-track vehicles are said to be forthcoming. . . .

The 81's, with a range of approximately 3000 yards, can hardly be expected to provide supporting fires to a battalion operating on a broad front, as, for example, the separate battalion supporting Corps cavalry. I believe that the substitution of 4.2 mortars in place of the 81's would better accomplish the mission.

To handle the expanded logistical requirement of the suggested organizational additions, the present support of nine 2½-ton trucks with trailers would have to be increased by six.

The battalion maintenance pla-

toon, presently consisting of three 2½-ton trucks, two tank recovery vehicles, one jeep and one wrecker, would be adequate with the addition of two 1-ton trailers to increase space for spare parts.

Looking now at the battalion rifle company, there is a company headquarters, with the usual administrative, mess, supply and maintenance sections. The company has three ¼-ton trucks, two armored carriers with one-ton trailers, and two 2½-ton trucks with trailers. None of these vehicles is free to resupply the company, particularly when it is attached to the light armored regiment operating on security, light combat or reconnaissance missions.

The need here is for an additional 2½-ton truck for the supply section for use on Class III.

In the rifle platoon, of the separate battalion, the rifle platoon leader is without means to carry out reconnaissance, just as the company is. Addition of a jeep to the scout section of the company or to the rifle platoon would permit tactical use similar to the use of the ¼-ton truck in the heavy tank platoon.

Lastly, the mortar platoon has three 60mm mortars organized exactly as is the standard foot infantry unit, with three half-tracks and one jeep. The weapons cannot be fired from the vehicles, which reduces them to the status of transported weapons. Therefore, could they not be replaced with 81's which could be fired from the vehicle and would have correspondingly greater range and effect?

Incorporation of these changes would, in my estimation, greatly increase the effectiveness of the Armored Infantry Battalion over its present operation.

FIRST LIEUTENANT CHARLES P. NIXON is a member of the 370th Armored Infantry Battalion, U. S. Seventh Army in Europe.

# WHAT WOULD YOU DO?

## Reinforced Tank Platoon in the Mobile Defense

AN ARMORED SCHOOL PUBLICATION

AUTHORS: MAJ. V. J. FISH; MAJ. J. A. BARNES

ARTIST: MAJ. SGT. W. M. COON



**SITUATION:**  
 THE 21ST M T K BN (REINF), PART OF CCA, 201ST ARMD DIV, HAS BEEN ATTACKING NORTH TO SEIZE AN IMPORTANT ENEMY COMMUNICATIONS CENTER. BECAUSE OF A LARGE-SCALE ENEMY COUNTERATTACK ELSEWHERE ALONG THE FRONT, THE 201ST ARMD DIV HAS BEEN ORDERED TO HALT AND DEFEND GENERALLY ALONG LINE HIGHWAY 19A. WITH THIS EXTENDED FRONT, THE DIVISION COMMANDER REALIZES HE MUST EMPLOY MOBILE DEFENSIVE TACTICS. THE 21ST M T K BN (REINF) HAS BEEN ASSIGNED A PORTION OF CCA'S SECTOR OF THE OUTPOST SYSTEM. CO A, 21ST M T K BN (REINF) HAS BEEN ASSIGNED THE SECTOR SHOWN ON THE SITUATION MAP. YOU ARE PLATOON LEADER 2D PLAT, CO A, WHICH HAS BEEN REINFORCED WITH 2D PLAT, CO A, 11TH ARMD BDE BN. YOUR COMPANY COMMANDER HAS FORMED OUT YOUR REINFORCED PLATOON STRONG POINT ON THE MAP AND ON THE GROUND. HE HAS ORDERED YOU TO ORGANIZE THE STRONG POINT FOR THE DEFENSE.

YOU AND THE ARMORED INFANTRY PLATOON LEADER AND THE PLATOON SERGEANT'S STUDY THE TERRAIN—ON BOTH THE MAP AND THE GROUND—FORWARD OF THE PLATOON POSITION.



THERE ARE THREE LIKELY AVENUES OF ENEMY APPROACH TO THIS POSITION. WE'LL HAVE TO PAY PARTICULAR ATTENTION TO THE WOODED AREAS ALONG SOUTH BRANCH CONERIGO CREEK.

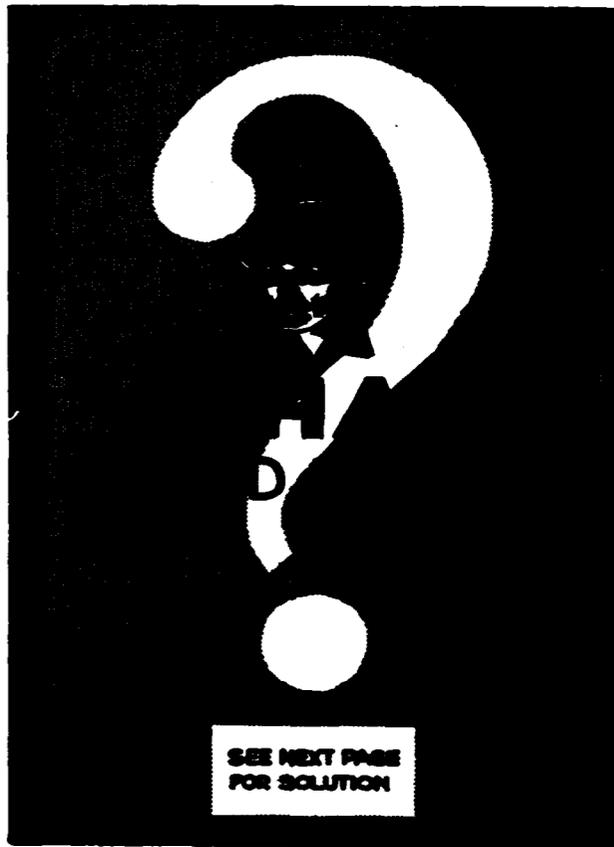
A STUDY OF THE TERRAIN SHOWS PLENTY OF COVER, BUT LITTLE CONCEALMENT. USING WHAT CONCEALMENT IS AVAILABLE, YOU START PLACING YOUR TANKS COVERING ENEMY AVENUES OF APPROACH FROM THE LEFT AND LEFT FRONT.



I WILL LOCATE TANK NUMBER TWO IN THE LARGER ORCHARD AND TANK NUMBER THREE IN THE SMALL ORCHARD.

TANKS TWO AND THREE LOCATED, YOU COMPLETE AUTOMATIC WEAPONS COVERAGE OF THE LEFT FLANK AND ISSUE INSTRUCTIONS FOR ORGANIZATION OF THE REMAINDER OF THE PLATOON POSITION.

SERGEANT, PLACE YOUR TANKS... (?) GEORGE (armored infantry platoon leader), PLACE AN ARMORED PERSONNEL CARRIER IN HULL DEFLATE ON THE LEFT FLANK SO THAT ITS MOUNTED MACHINE GUN CAN BE MANNED BY THE DRIVER. HAVE YOUR SQUADS DIG IN... (?) ESTABLISH OPS AT... (?) SET UP PATROLS TO CONTACT THE FIRST AND THIRD PLATOONS AT... (?) PLACE YOUR OTHER PERSONNEL CARRIERS... (?) WE WILL ESTABLISH ROAD BLOCKS AND PLACE MINE FIELDS AT... (?)

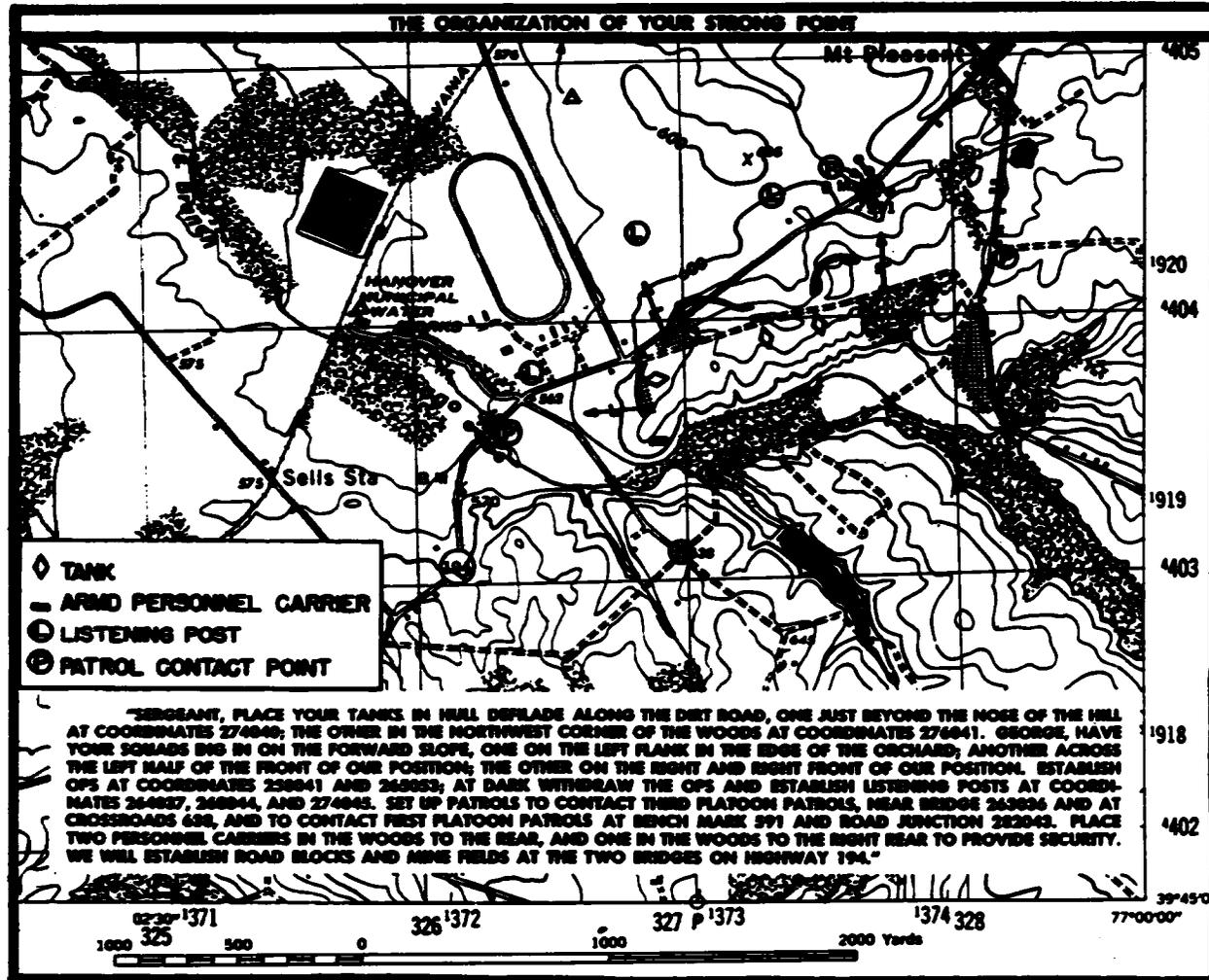


SEE NEXT PAGE FOR SOLUTION

*A panzer expert discusses German antitank experience on the Russian front during the period 1941 to 1945*

# Antitank Defense

by HERMANN BURKHART MUELLER-HILLEBRAND



**I**N 1941, the Soviets introduced tanks into combat, which were an unpleasant surprise for the Germans both in quantity and quality. The German Army was forced to adapt its own weapons and combat methods to its opponent. Therefore it appears to the author as a fortunate coincidence that two articles appeared in the November-December 1952 issue of ARMOR. One dealing with the problem of antitank defense “Mobile Antitank Weapons in Armored Warfare” and the other “The Story of Soviet Armor: Assault Guns,” an excellent survey, dealing with an important branch of the Soviet Armored Force: the Assault Guns. According to this article it is to be expected that the

U. S. S. R. will pose serious antitank defense problems to its foes in a future war as it did in the last one. A new problem will be the fact that now assault guns (Russian: S.U.’s) may be expected in great numbers alongside the well-known tanks. The author of “The Story of Soviet Armor” has stressed the characteristics of these assault guns in his account. It is therefore perhaps of interest to consider the problems which Soviet Armor presented to German antitank defense in the last war.

The belief that the primary mission of the tank is to destroy the enemy machine guns and infantry became qualified in the campaign following 1941. If the enemy infantry is protected by tanks, the primary mission of the friendly tanks is to combat the hostile ones as the most dangerous antagonist of the friendly infantry.

It soon became apparent that the best weapons for combatting Soviet tanks were our own tanks. However, the tank is such an expensive weapon that it can never be produced in such numbers that it can take over the mission of mobile antitank defense. The German Army reserved the tank exclusively for the Armored Divisions (*Panzerdivisionen*), in order to utilize its advantages to the best possible effect. This decision, however, left the question of how to provide the Infantry Divisions with a mobile antitank weapon unresolved, since the relatively immobile antitank guns could not alone resist the swift and aggressive Soviet Armor.

Two different approaches were made to the problem of creating a mobile antitank weapon. One led to a solution similar to that which was recommended in the article “Mobile Antitank Weapons in Armored War-

## DISCUSSION

Strong points in the mobile defense are organized on critical terrain features which dominate likely avenues of enemy approach into the defended area. The mission of units at strong points is to deceive the enemy, to slow him down, to force him to deploy, and, if possible, to stop or destroy him. Tanks and automatic weapons are placed on the position so as to provide a maximum volume of fire covering enemy avenues of approach. Personnel carriers, because of their vehicular machine guns, may be used in organizing the position; otherwise they are assembled in a covered position within the strong point. Range cards are prepared for each position. Road blocks and mine fields are established and covered by tank and small-arms fire. These obstacles should be located so that they do not hinder the counterattack by the reserve. Advantage is taken of all natural obstacles to delay, slow down, and harass the enemy. Observation posts are established during daylight hours, and listening posts at night when observation posts are pulled in. Contact between strong points is maintained primarily by radio. However, patrols are usually operated between strong points during hours of darkness, and are used during daylight to safeguard areas covered neither by the strong points, nor by observation. At night, or when visibility is limited, tanks and automatic weapons should be sited to fire down roads or similar likely avenues of approach in order to ensure hits on approaching enemy vehicles and personnel. Armored infantry normally will dig in along forward slopes of strong-point positions.

Hermann Burkhardt Mueller-Hillebrand, former Generalmajor in the German Army, during World War II was Chief of Staff of the German XXXVI Panzer Corps and the Third Panzer Army.

All photos U.S. Army



75mm Pak 40 on German-Czech PrKFZ 38(T) tank chassis.



German AT gun on Mark III chassis in use by U.S. soldiers.

fare" cited above. The antitank gun (a long-barreled 75mm gun at that time) was placed on a tracked chassis, provided with light armor and named "Antitank Gun on a Self-Propelled Mount" (Pak/Sf1.). In this manner there was created a weapon with an efficient antitank gun, cross-country mobility and protection against shell fragments. It was planned to use them in the following manner. The Pak Sf1. should be held in readiness to be thrown forward swiftly into previously reconnoitered concealed positions in case of a hostile tank attack. Here they would await the enemy tanks. This Pak/Sf1. was not expensive and could be produced in great numbers comparatively rapidly. Prior to this the Pak/Sf1. had not been regarded as an ideal antitank weapon and therefore a further solution of the problem was sought at the same time.

The Pak Sf1. betrayed, as was expected, weaknesses in tactical employment. These weaknesses were of the high silhouette of the vehicle and its thin armor.

The unavoidable height of the vehicle meant that it often could find no suitable firing position. Furthermore, the Soviet tanks preferred open terrain for their attacks. Consequently, the Pak/Sf1. were often forced to take up firing positions which, despite the attempt to camouflage them carefully, could not be kept hidden from the enemy. They then swiftly fell prey to the hostile tanks or to artillery fire.

Because the Soviet tanks often appeared suddenly and because of their speed as well as their tendency to penetrate the German defensive positions without pauses for fire and observation, it was often impossible for the antitank guns, Pak/Sf1. to reach their carefully reconnoitered positions in time. They were thus forced to take up the battle while they were still on the move. In this situation, however, they were hopelessly inferior to the tank because of their light armor.

The Pak/Sf1. naturally were not in a position to counterattack hostile tanks which had already broken through the German lines.

Even so, the Pak/Sf1. provided an important support for antitank defense in an especially critical time. Because of their above-mentioned



German Flak 40 dual purpose 88mm gun.

faults, though, they went out of production in the course of the war. Their production figures were: 1942—1123; 1943—1375; 1944—441.

As another solution to the creation of a mobile antitank weapon, less expensive than a tank, there was the Assault Gun. The Assault Gun was developed before the war. It was meant to support the infantry in combat, especially in the attack. For this purpose it was equipped with a short-barreled 75mm gun. It was to support the attack of the infantry by following the infantrymen as closely as possible and silencing enemy heavy infantry weapons with a few individual rounds. For this purpose, the turret was left off and the gun mounted as low as possible on a tank chassis. In this manner this vehicle achieved a significantly lower silhouette than the tank and could use concealment to good advantage. The frontal armor was strong, on the sides it was somewhat weaker than a tank's, since the Assault Gun was not expected to break into the enemy position in front of the infantry and was therefore less exposed to flanking fire than the tank. For this reason the turret could be eliminated. The traverse of the gun was very limited. The Assault Gun was lightly armored in the rear and on top so that the crew was fully protected. It had distinguished itself in combat and had come to be, in fact, a sort of infantry support tank.

#### A Long Gun

When the difficulties concerning antitank defense arose during the campaign against the U. S. S. R., it was natural to give the Assault Gun a long gun instead of a short one and thereby enable it to give battle to the Soviet tanks. As a result of production difficulties, the above mentioned Pak/Sf1., which could be

more swiftly manufactured, was ordered at the same time.

The Assault Gun with the long gun immediately showed itself to be a weapon which was equal to the tank as a defensive weapon. Above all, its low silhouette was extremely useful. This characteristic made the search for positions simple and made it difficult to detect. Indeed, it could often "sneak up" on the enemy tanks. Because of its heavy frontal armor it could engage in combat with the tank on even terms and also meet it in the attack. For this reason the Assault Gun was renamed "Tank-Hunter" (*Jagdpanzer*).

The limited traverse of the gun proved to be a very minor disadvantage since traverse could be accomplished by swinging the entire vehicle.

During the rest of the war mobile antitank defense depended upon the Tank-Hunter. Furthermore, the Tank-Hunter was able to take over the missions originally assigned to the short-barreled Assault Gun.

The fact that a heavier gun could be mounted on the tank chassis of the Tank-Hunter because of the reduced weight (thinner side and rear armor and elimination of the turret) proved to be a further advantage, as the following comparison indicates:

Chassis	Weapon on Tank	Weapon on Tank-Hunter
III	short 75mm gun	long 75mm gun
V	long 75mm gun	long 88mm gun
VI	long 88mm gun	long 120mm gun

This meant a further reduction of costs and simplification of production. Furthermore, it greatly facilitated the work of the maintenance system since tank and Tank-Hunter could be serviced by the same trained personnel with the same spare parts and maintenance machinery.

In case of need the Assault

Gun/Tank-Hunter could also replace the tank. For example, the author commanded a tank regiment in the Fall of 1943, one half of which consisted of Assault Guns, because of the existing shortage of tanks. In the battles in the Ukraine the Assault Gun proved itself to be the equal of the tank, indeed, often its superior because of its lesser height. Of course, these battles took place in very lightly covered and gently rolling terrain, which normally offered wide observation, so that battle was usually joined at great ranges. In this situation the Assault Gun could, because of its lesser height, often stalk forward to within closer range of the enemy than could the tank. However, as has been noted, in this case the terrain situation was unusual and especially favorable for the employment of the Assault Gun as a tank "substitute."

Despite the fact that the Tank-Hunter had the great advantage of a considerably lower cost than the tank, its production remained below the number required. Nevertheless, the production of the still less expensive Pak/Sf1. was discontinued because of its unfortunate record.

Consequently all that could be done, besides maintaining the highest possible production of Tank-Hunters, was to seek to improve the relatively fixed antitank defense weapons. Moderate success in this direction was achieved by means of an increase in the number and types of hand

carried antitank weapons. Between these hand carried antitank weapons and the mobile antitank weapons a gap was created by the insufficient quantities of available Tank-Hunters. This gap had to be filled by towed antitank guns, which were unsatisfactory weapons because of their size and relative immobility.

#### Towed Guns

When the towed antitank guns were employed in large numbers and in such a manner that they could not be discovered before opening fire, they remained an effective weapon to the end. Indeed, the Russians stopped some German tank attacks by concentrating their antitank guns into strong antitank-artillery switch positions. A prerequisite for success, however, was that these antitank guns were so emplaced that the enemy only noticed them after he was already within their effective range. Otherwise they would fall victim to the hostile tanks or artillery shortly after opening fire. They could fulfill their mission especially well from reverse-slope positions. However, one must recognize that the effect of the antitank guns will not reach forward to the front lines. Still it always proved to be better to ward off an enemy attack in the depths of the friendly position than to emplace the antitank guns too far forward and have them fall victim to the attacker even before they could take

any effective action against him.

Effective cooperation can be achieved between the relatively immobile towed antitank guns and Tank-Hunters by emplacing the immobile guns in strongly knit groups. Between these groups gaps are left, the size of which is determined by the number of antitank guns available, and the terrain. In this manner the hostile tank attack would be delayed or at least channelized so that time would be won and favorable conditions created for the commitment of the Tank-Hunters.

The principle that a unit defending against tanks must not withdraw but must remain steadfastly in place, which was insisted upon in the article "Mobile Antitank Weapons in Armored Warfare," was also a basic principle in the German Army. The German Army had the following motto for the Infantry during tank attacks: "Whoever runs, dies." Under no circumstances may the Artillery leave their positions during the defense, even in case of danger that the guns may be lost. The withdrawal of the guns robs the infantry of its moral support in the crisis of the battle. Batteries which held were often a prop for the infantry in desperate situations and, fighting in the front lines, prevented the collapse of the defense. Usually they could then be withdrawn during the night.

When the basic principle that the infantry shall under no conditions withdraw in defense against enemy tanks is recognized, then the use of towed antitank guns is highly significant, assuming that one does not use them singly but in "packs" and that they are not emplaced within view of the enemy's departure position.

Nonetheless, towed antitank guns remain only a stopgap between the hand carried antitank weapons and the insufficient numbers of mobile antitank weapons.

In short, the conclusion is that the Tank-Hunter distinguished itself as the backbone of the German mobile antitank defense in the campaigns of 1941-1945 against the U. S. S. R. The Pak/Sf1., which was only adopted as the "cheapest" solution of the problem because of the weakened productive power of Germany, failed to meet minimum requirements.



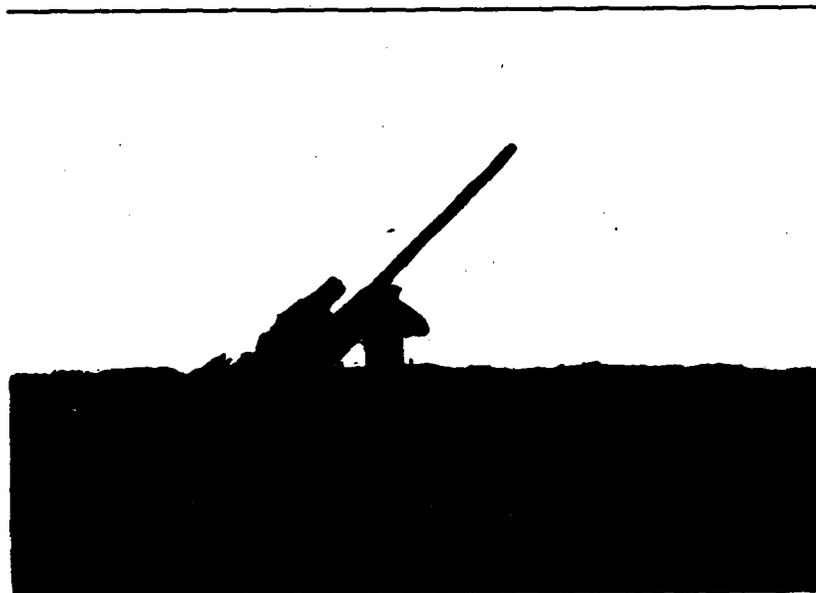
German Panzer Jaeger tank destroyer produced at the Czech Skoda factory.

# THE SKYSWEEPER

## New Tool for the Antiaircraft Artilleryman

**R**ECENTLY the Department of Defense raised the curtain on a new automatic antiaircraft artillery weapon which is virtually an artillery machine gun. This new weapon, nicknamed the Skysweeper, is the first of its kind to have radar, computer and gun on one carriage. It is likewise the first of its kind to be fully integrated with fire control and fire power. Its capabilities include spotting and tracking with radar at a maximum distance of 15 miles, and aiming and firing the gun automatically at any enemy aircraft flying at near sonic speed at a distance of four miles. In addition, it can be used against moving ground targets. These capabilities can be accomplished regardless of the weather or when the aircraft are invisible. In the event of mass targets, selection can be made by the operator. This mobile unit is towed by a cargo tractor. It can be emplaced and have its radar operating in five minutes regardless of the type of terrain. The unit weighs ten tons and is air transportable. In traveling position it is 25 feet long, eight feet wide, and seven feet high.

The gun is a 75mm antiaircraft with automatic loading and firing features combined. The gun fires high explosive shells, weighing approximately 12½ pounds each, at a rate of 45 rounds per minute. This type of shell armed with a proximity fuse explodes automatically at a predetermined distance from the target. The ammunition is automatically fed and rammed into the gun from two eleven-round magazines by an electrically operated loader rammer. The firing can be controlled remotely by either the radar or computer operators. The



The skysweeper emplaced, and ready to go into action within a 5 minute period. It has the additional potentiality of employment against enemy ground targets. U.S. Army

counter recoil movement automatically opens the gun breech.

The radar unit is equipped to automatically sweep the entire sky once every 40 seconds, detecting aircraft in its 15-mile radius, and graphically showing as a *blip* on a cathode ray picture tube in the radar control panel. This target information is automatically transmitted to the electromechanical computer. The radar unit is in a large console mounted to the left of the gun tube in the front corner of the carriage, surmounted by a *dishpan* antenna. Two picture tubes are visible on the rear side of

the console. One is used for scanning and the other for tracking.

The computer automatically plots the range, speed and course of the approaching target, determining where the gun must point so that when a shell is fired it will hit the target. In other words, the "lead," necessary in firing at a moving target, is automatically built in. The computer is located in a large console mounted to the right of the gun tube in the right front corner of the carriage and automatically feeds future target position data into a power control which translates it into corre-

*The Department of Defense has removed the wraps from its newest and largest caliber automatic weapon to be produced to date. Here are the facts and a glimpse at the Army's most recent addition to its arsenal of weapons—a 75mm artillery machine gun—the most effective weapon against low-flying, high-speed aircraft.*



Capabilities include the tracking of enemy targets moving at near sonic speeds up to a distance of 15 miles and target hits up to a maximum range of 4 miles. U.S. Army

sponding gun motion.

The integrated units discussed above are all mounted on a combination chassis and gun mount with 4 wheels. These are removed along with the axles emplacing the gun. Specially designed shock absorbers permit towing over rough ground by a prime mover which is usually the M8 Army cargo tractor. The mount can be emplaced on uneven ground or on a slight slope. A motor-driven hydraulic jack lowers the carriage to the ground. Reversing the jack raises the carriage. A rigid pedestal and 4 retractable outriggers extend

from the mount when the weapon is emplaced.

A target selector which is an auxiliary sighting device is used to direct the gun to more advantageous targets which might have been missed by the gun operators. This selector is considered to be a piece of off mount equipment. Two cables connect the target selector to the mount and the mount to the electrical power source.

Operation is almost entirely automatic. Once a gun is emplaced the radar operator causes a radar scanner to continually rotate. When planes appear on the picture tube the opera-

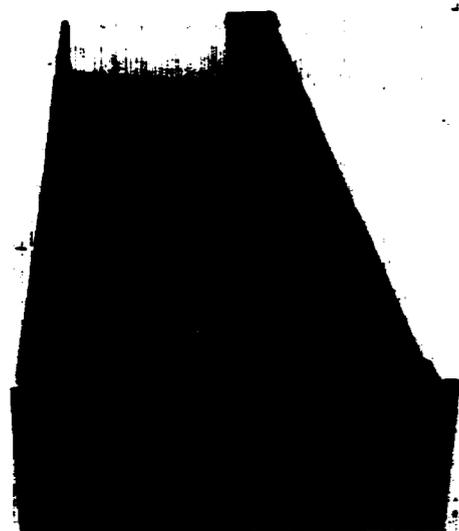
tor depresses a *dead man* foot pedal which stops the rotation of the radar scanner. After making minute adjustments in range, azimuth and elevation, he releases the foot pedal for automatic operation. Automatically the radar tracks the target, feeding data to the computer. The computer plots the future position and aims the gun at this future position. As a target comes within gun range, either the computer or radar operator squeezes the firing trigger and the gun continues to fire automatically.

Due to the complexity of this unit, a 37-week training course for maintenance personnel has been established at the Ordnance School, Aberdeen, Maryland.

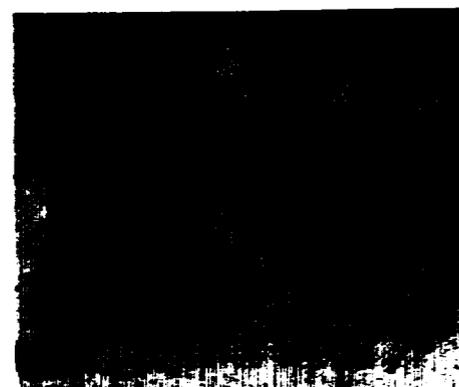
Development and production were commenced by Army Ordnance on this weapon late in World War II. The need for such a weapon was determined by the limitations of the 40mm gun in providing defense against high speed, medium altitude aircraft. Once the military characteristics were determined, Ordnance instituted a complete research, development and production program embodying both American industry and our Ordnance arsenals. Included among these are:

The Watertown Arsenal, which serves as project coordinator and technical supervisor; the Sperry Gyroscope Company; the A. C. Spark Plug Division of General Motors; the Aetna Standard Engineering Company; Franklin Institute; American Machine and Foundry Company; the Wheland Company; National Forge and Ordnance Company; the Cameron Iron Works; and the Frankford, Rock Island and Watervliet Arsenals.

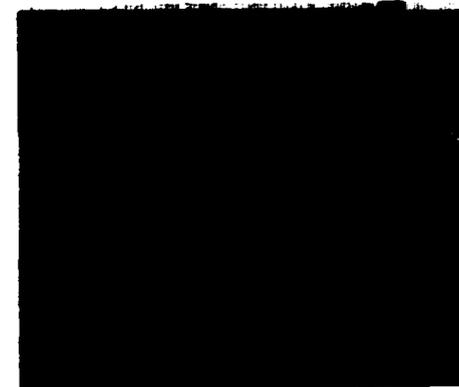
# A NEW RANGE FINDER TRAINER



A view of the complete range finder trainer



A close-up of the aid showing its simplicity



The tank model in relation to the reticle

At The Armored School a new Range Finder Trainer has been developed by the Weapons Department and constructed by the training aids shop to meet and minimize the problem in qualifying the average tank gunner in the use of the T41 range finder. This problem became apparent with the issue of M47 tanks to using units.

In the past it was possible to train a gunner in a few weeks, but with the M47 tank it became evident that longer and more intensive training is needed. How is this to be accomplished in the average organization? Tanks may not be available due to other training requirements. A range finder training aid is required. This aid must be simple enough that any tank organization can make it from materials available. It cannot consist of expensive projectors, stereo glasses, etc. It must provide a rapid method of training for the average tank gunner before using the T41 range finder.

The aid shown here is durable, simple, cheap and will enable a group of men to receive instruction and do practical work at the same time. The material cost is approximately \$10.00.

The aid can be modified for use with screen wire terrain covered by paint, as a sand table; or any other way to please the using organization. Targets may be models of tanks, houses, etc., approximately 3" x 1½" x 1". The plastic reticle may be formed of painted tin if plastic is not available. When painting terrain it is recommended keeping the colors light to increase the contrast with the reticle. The aid can be used either with or without binoculars merely by lengthening the control and by adding a simple binocular stand.

One of the advantages of this aid is that it enables a man to visualize the proper depth perception with the ranging reticle that he should in the T41 range finder. Actual ranging with the range finder is a simple matter of depth perception once the operator is able to see the ranging reticle in stereo.

Those persons with poor depth perception will require more practice than the average man. The amount of practice necessary is not practical with the tank, but is easily done with the aid.

A recommended ranging procedure is for the gunner to sit approximately 18 feet in front of the aid, holding the control lines.

The instructor places the target on the terrain and records on a score sheet the scale range. Targets must be kept movable so the operator cannot "catch on" to the target range. The instructor moves the reticle so it is off the target and tells the gunner to range on the target. The gunner operates his control lines to place the correct portion of the reticle at target range.

The instructor records the reticle range on the score sheet. After moving the reticle off the target, he allows the gunner to range again. This procedure is repeated five times for each target at each range.

The score sheet will show the average error the gunner is making and over a period of time this should not vary over the acceptable limits established for the T41 range finder (4 UOE).

This aid is not designed to replace the range finder nor to make a person a qualified gunner, but if used in conjunction with the actual instrument it will speed the required gunner training and ease the training problems of the organization. It is used as an intermediate step after the explanation of the range finder and prior to commencing work with the range finder.

Detailed plans of this device are being forwarded to OCAFF with recommendations that it be accepted as a standard training aid.

Reviews  
Best Sellers  
Magazines  
Ads and Notices  
Directory

## THE BOOK SECTION

A Service to You!  
10% Discount: On orders of  
\$10.00 or more  
PREPAID POSTAGE: When pay-  
ment accompanies order.  
SPECIAL PREPUBLICATION  
PRICE ADVANTAGES

### "AN ODYSSEY OF WANDERINGS, WHICH IN FANATICISM PURSUES ITS COURSE"

—Hitler in *Mein Kampf*

**HITLER: A STUDY IN TYRANNY.**  
By Alan Bullock. 776 pp. Har-  
per & Brothers, New York.  
\$6.00.

Reviewed by  
**MICHAEL A. MUSMANNO**

For reasons not strictly consonant with scientific reality, writers and speakers from time immemorial have gone to the animal world for similes descriptive of human qualities. Whether rhetorically justifiable or not, no one will seriously question the employment of that device in describing Adolf Hitler as a man who was as wise as a serpent, crafty as a fox,

—The Subject



Captured German Photo

ravenous as a jackal, greedy as a boar, false as an adder, pitiless as a jaguar, and insensate as a vulture. But even this combination of malodorous zoological specimens would have meant little to the peace of any small town in Germany, much less to the whole of Germany and nothing at all to the world were it not that they were joined by a furry creature which represented the ferocity, the gluttony, and the mercilessness of the entire savage animal kingdom—the Russian bear. Had that bear not sealed off the eastern wall of the Fuehrer's lair, the Hitlerian wolf would never have prowled off to the west, ravaging and macerating nations and peoples, leaving desolation and despair in his predatory tracks.

Everything that is said of Adolf Hitler must be doubled when speaking of Joseph Stalin. On August 23, 1939, Stalin drank a toast to Hitler: "I know how much the German nation loves its Fuehrer; I should therefore like to drink his health."

—The Author

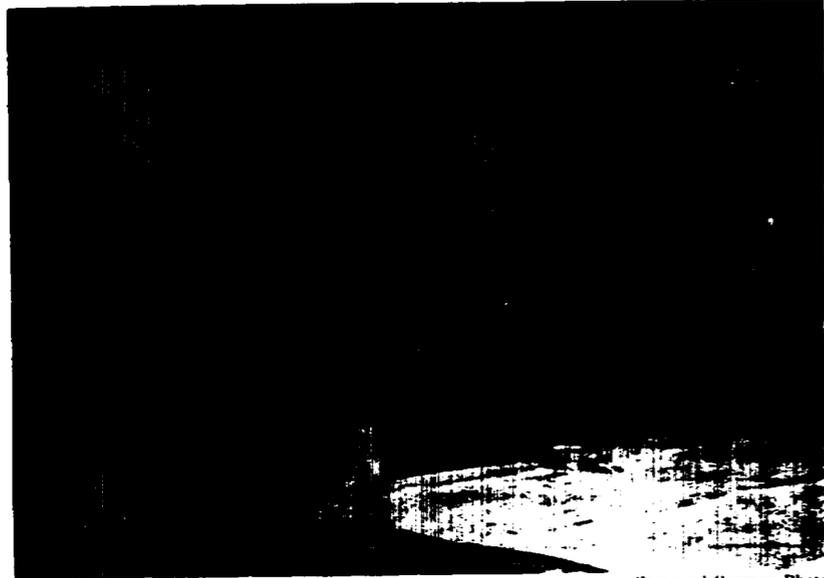


Harper  
Alan Bullock is an Oxford historian who abandoned his research work during World War II to help build up B.B.C.'s foreign broadcasts to Europe. He later became Diplomatic Correspondent of B.B.C.'s European Service. Mr. Bullock taught Modern History at New College before being appointed in 1952 as Canon of St. Catherine's, Oxford.

—The Reviewer



Ferry-Studio  
Michael A. Musmanno is an associate justice of the Pennsylvania Supreme Court. During World War II he served as naval aide to Gen. Mark W. Clark. Later a judge of the Nuremberg International War Crimes Trial, he is the author of seven books, including *Ten Days to Die* (1936), the dramatic account of Hitler's last ten days.



Captured German Photo  
The Axis partners in their heyday. Mussolini and Hitler, flanked by Keitel, poring over the map as they plan to plunge nations and peoples into world war.

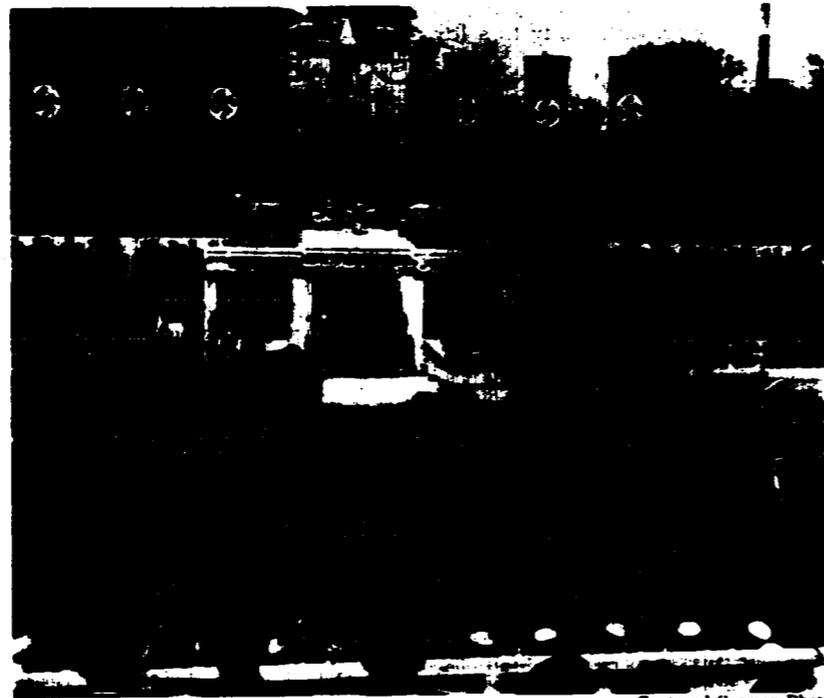
greatest value lies in depicting the imperative demand for an international force which will quickly seize Hitlerian and Stalinist spiders before they begin to spin their circles of terror and conquest.

One reads with sickening fascination the whole morbid tale of prime ministers, ambassadors and presidents hurrying on trains, racing in automobiles, streaking through the skies and climbing the Bavarian Alps to plead with one human being that he not destroy the world. What happened to the dignity of the human mind, the beauty of the human soul, the neatness and precision of the human intellect, the wisdom and learning of the ages, that the most powerful nations cringed before this one vulgarian who still carried with him the dust of the park benches on which he had slept?

Every European and American diplomat who participated in this debasing homage was aware of Hitler's destructive plans, his nihilistic designs and his moral destitution—all advertised and proclaimed in his book which appeared in bookshops throughout the world. The pages from *Mein Kampf* which Mr. Bullock quotes are terrifying today in their prophetic accuracy. Between 1924, when the book was published, and 1939, when its print ran into blood, event after event gave ever-accumu-

lating proof that Hitler intended to really erect the abattoir of intolerance and aggressive war which he so graphically described in that best-seller which even made money in America.

What caused Neville Chamberlain to shout with exultation, after Mu-



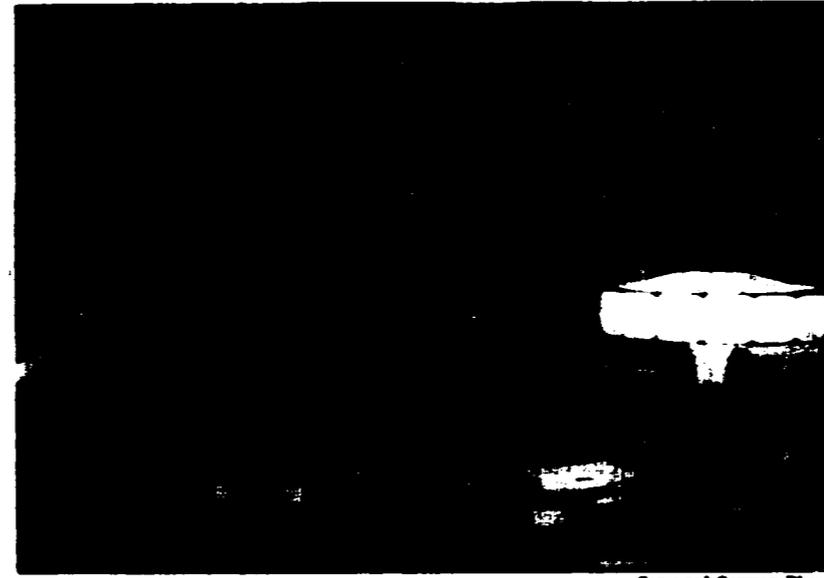
Captured German Photo  
The pageantry of Nazism. One of the prime factors in stimulating mass hysteria was the mass military spectacle, a familiar thing in the dictatorial pattern.

nich, that he had brought back to England "peace with honor"? He knew that he had participated in a "deal" which gave part of a country not his own to another country headed by an admitted treaty-violator. On April 28, 1938, Hitler spoke to the Reichstag but he addressed himself directly to President Roosevelt with the words:

Not only have I united the German people politically, but I have also rearmed them. I have also endeavored to destroy sheet by sheet the treaty which in its 448 articles contains the vilest oppression which peoples and human beings have ever been expected to put up with.

Hitler rearmed Germany in violation of the Versailles treaty, he built a navy in defiance of a Versailles prohibition; he constructed submarines in opposition to a Versailles injunction; he marched into the Rhineland, and in doing so trampled on the Versailles parchment. Hitler spoke to his generals as a robber chief outlines his plans for a large scale piece of outlawry:

There have never been spaces without a master, and there are



Captured German Photo  
In the Russo-German Pact of 1939 two vicious dictators joined in a plan for the rape of Europe. Stalin and Ribbentrop look on as Molotov signs the agreement.

none today: the attacker always comes up against a possessor. The question for Germany runs: where can she achieve the greatest gain at the lowest cost.

How could anyone achieve "honor" by dealing with this man?

To a student of the period and one who has read the scores of memoirs which have poured forth from German generals, admirals, diplomats, agents, and confidantes, and the equally large number of volumes which have rolled off the American and British presses authored by observers of the Hitlerian era, Mr. Bullock's book presents very little that is new. This observation, however, is not intended to be disparaging. It is like saying that anyone can build a battleship if he has the 10,000 pieces of equipment, armor, machinery and ordnance which go into the construction of a dreadnought. Alan Bullock had more than 10,000 documents to analyze, evaluate, digest, compare and correlate. And from this mass of material he has produced an authoritative, readable, accurate account of the most catastrophic personality this world has ever seen. This book was needed. It was imperative that someone compress between the covers of one volume this appalling story, many of whose incredibly daring events could, without authentication, well be doubted as

being considerably exaggerated if not outrightly invented.

Napoleon, Caesar, Genghis Khan, Alexander and Philip galloped through history to the accompaniment of failing empires and crashing dynasties while cities, nations and civilizations perished in flames. But

with their deaths new civilizations arose, and the ambitions of the deceased tyrants were buried in the ashes of the ruins they had wrought. However, what Marc Antony said of Julius Caesar in blandishment, self-protection and appeasement, can only be said of Adolf Hitler in tragic truth—"the evil that men do lives after them."

Stalin could never have become the global colossus of fear had he not perceived what his Red legions could do against the best trained warriors in the world. Stalin ignores—for all tyrants are essentially ignorant—that the hammer of his offensives needed the anvil of an allied army on the other side of the enemy which, of course, was supplied by the United States, Great Britain and France. Joseph Stalin cannot expect today to have any such anvil no matter where he attacks, because his satellites would crack like porcelain dishes under the first blow of war. However, in the meantime the waters of the Rhine, the Danube, the Tiber and perhaps even the Hudson would be incarnadined with a new outpouring of blood in the first clash of atomic monsters.

It is possible that the world today



Captured German Photo  
Prelude of things to come. Hitler, accompanied by Keitel and other staff and local commanders, views the destruction resulting from strong Allied air raids.

# PANZER LEADER

by Heinz Guderian

The memoirs of Germany's great panzer leader and mobile warfare's great executor constitute one of the top books to come out of history's greatest war, and as a solid piece of history of mobile warfare and its contemporary tool, the tank, are required reading for all members of the mobile arm. The book comprises a real slice of the background of doctrine, organization, tactics, techniques, equipment, history and leadership in mobility in war.

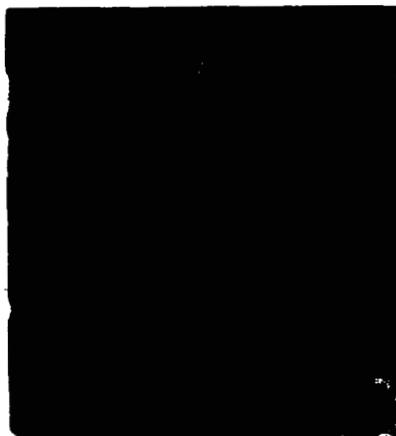
\$7.50

might still have been divided into armed camps even if Hitler had not existed. I myself do not think so. If Stalin's conquistadorial hunger had not been whetted with the swallowing of Latvia, Lithuania, Estonia and half of Poland, all put on his plate by Hitler, and if Bulgaria, Hungary, Albania, and Rumania had not fortuitously been harvested by the mowing machine of his divisions pushing back his treacherous erstwhile ally, Stalin would have still schemed and planned for the world Communist revolution, but he would never have had the confidence of martial victory. Even today the Russians have an inferiority complex: the brazenry of the Vishinskys and the contemptuousness of the Molotovs are but conscious masks to conceal the awareness of an intellectual and cultural primitiveness. However, even a bow-and-arrow barbarian prince can be proud of an ambushing victory over a rifle-bearing army corps, and that pride can lead him into the folly of an open attack.

Therein lies the danger of Joseph Stalin and his presumptuous Politburo, still intoxicated from the triumphant march over the corpse of Germany into the Reich Chancellery with its artillery-churned bunker housing the burned and charred corpse of Adolf Hitler.

No person has the right to consider himself even reasonably informed on what is happening today unless he knows how this enlightened age could have produced an Adolf Hitler, and, more, how a Hitler could have been accepted by an enlightened nation. Scientifically and mechanically the world has made greater progress in the last century than it made in all the centuries which went ahead, but it is a serious question how much, if any, the intellect has been able, since the days of Aristotle, to educate the popular emotions.

Mr. Bullock calls Hitler "the greatest demagogue in history." He then says sententiously: "Those who add 'only a demagogue' fail to appreciate the nature of political power in an age of mass politics." America was rather amused at Hitler's oratorical performances before the huge crowds that turned out to applaud and cheer him, but it was no amusing matter. Hitler was in dead earnest and the people were in dead earnest. They



Captured German Photo  
Goebbels, the mad intellectual.

were listening to what any people would wish to hear: their nation had not been disgraced in losing the war, the people had been betrayed, the nation was reborn, there would be employment for everybody, and there would be prosperity.

Nothing succeeds like energy. Hitler spoke incessantly and ubiquitously. By the time he became chancellor he had appeared in every town in Germany. Voice amplification and radio, of course, literally carried his voice into every home, and, with constant repetition, his message was able to penetrate many breasts which at first were steeled against it.

Of course, truth was never a part of the Hitler being. His speeches were masterpieces of deception and aggression. In *Mein Kampf* he said: "It is not by the principles of humanity that man lives or is able to preserve himself above the animal world, but

## ATTENTION!!!

The price of the book

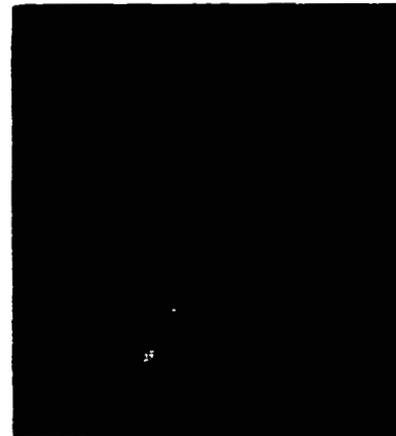
### HISTORY OF THE FRENCH FIRST ARMY

by Marshal de Lattre de Tassigny

now published in an American Edition and no longer available in the English Edition

\$9.50

ARMOR—March-April, 1953



Captured German Photo  
Goering, the mad voluptuary.

solely by means of the most brutal struggle."

Mr. Bullock comments:

This is the natural philosophy of the doss-house. In this struggle any trick or ruse, however unscrupulous; the use of any weapon or opportunity, however treacherous, are permissible . . . Astuteness; the ability to lie, twist, cheat and flatter; the elimination of sentimentality or loyalty in favour of ruthlessness, these were the qualities which enabled men to rise above all, strength of will . . . Hitler never trusted anyone; he never committed himself to anyone, never admitted any loyalty.

But dishonest, false and hypocritical as he was, the "jumped-up, ill-educated, loud-mouthed agitator" was capable of stirring audiences into frenzied and mad approval that must

## ATTENTION!!!

The price of the book

### U-BOAT 977

by Heinz Schaeffer

now published in an American Edition and no longer available in the

English Edition

\$3.50

ARMOR—March-April, 1953

have been frightening to the whole world had the world been able to appraise what ill-directed emotionalism can lead to. Here was a man who had nothing to endear him to the people; he possessed no outer or inner graces; he cherished no heroic military record; he was no sportsman—he could not drive, swim or play any game, he paraded no distinguished accomplishments. All he could do was talk. And such talk!

After the abortive *Bürgerbräu Keller* Putsch of November, 1923, which resulted in the death of 16 people, Hitler was arrested and tried for treason. At the trial he verbally attacked the Republic he had tried to destroy: the very Republic whose authority the judges represented. He prognosticated even here his future dictatorship:

The man who is born to be a dictator is not compelled; he wills it. He is not driven forward, but drives himself. There is nothing immodest about this . . . The man who feels called upon to govern a people has no right to say: If you want me or summon me, I will co-operate. No, it is his duty to step forward.

The judges of that tribunal have a responsibility to history. Although they found Hitler guilty of treason, they sentenced him to but five years in prison, and then released him when he had served only nine months of his term!

Bullock's book of 700 pages tells the whole story. Nothing is omitted. In it you will find Hess, the mad pilot who flew to England to stop the war; you will find Goering, the mad voluptuary; Himmler, the mad butcher; Goebbels, the mad intellectual; Ribbentrop, the mad simpleton; Hans Frank, the mad esthete. The whole menagerie of lunatics is here.

Mr. Bullock also devotes many chapters to Hitler's military exploits, and here Hitler is shown to be the biggest lunatic of all, save the generals who allowed him to drive them into obvious disaster, ruin and disgrace.

It is too bad this book cannot be put into the hands of every inhabitant of Russia, so that they can see what is the fate of Russia under their own Adolf Hitler.

# ROMMEL The Desert Fox

by Brig. Desmond Young

From the strike to the West in 1940 on through the African campaign, the Allies had repeated evidences of Rommel's ability in the field of mobile warfare. Small wonder that Churchill said of him "His ardour and daring inflicted grievous disasters upon us . . . We have a very daring and skilful opponent against us, and, may I say across the havoc of war, a great general."

\$3.50

75

## FORMOSA

A timely book with the eyes of the world focused on this troubled spot. The author, who first saw service in Formosa with the State Department in 1912, handles his subject in three parts: background, presenting the physical setting; Developments since World War II dealing with the course of United States policy, both in Formosa and the Far East; and International commitments as they affect the island; and thirdly, an analysis of the future.

by J. W. Ballantine \$2.75

## THE RUSSIAN MIND:

### From Peter the Great through the Enlightenment.

A psychological portrait of the Russian mind from the Middle Ages to the Crimean War, drawn from a careful analysis of the Russian educational system, class structure, press, etc. Bibliography and index.

by S. R. Tompkins \$4.00

## THE U. S. AND MEXICO

Another volume in the American Foreign Policy series, edited by Sumner Welles. The author reviews salient features, geographical, historical, political, economic, and social of Mexico, both past and present. He ties in the United States, in its Good Neighbor role, and how she has assisted Mexico in the beneficial evolution of the country next door.

by Howard Cline \$6.00

## Can Russia Survive?

This book describes the dark side of Soviet Russia. Five leading London publishers turned it down on the ground that it presents a biased view of that country. In 1934, Mr. Czarnomski wrote a book, entitled, *Hitler Meets War*, and several publishers turned it down, because it was alleged to present a one-sided view of Germany. In both cases the author freely admits the charge. He is utterly biased against tyranny and oppression, against cruelty and the degradation of man. This book is offered to those who are equally biased and have the courage to look ugly facts in the face.

by F. B. Czarnomski \$2.75

## BACK DOWN THE RIDGE

Their own stories told by wounded officers and men of their rescue from the field of battle in Korea, their treatment (including the miracles worked by modern medicine), the courageous and patient care given by nurses and medics, and inevitably, a good deal about the war, the fighting, and their comrades in arms. By the author of *They Were Expendable*.

by W. L. White \$3.00

## THE ARMY OF TENNESSEE

Nowhere in the annals of the United States military history is there a more tragic, yet valorous story than that of the Army of Tennessee. Prior to publication of this book, Douglas Southall Freeman wrote: "The greatest gap in Confederate military history concerns this Army." In Mr. Horn's book this is fully answered.

by Stanley F. Horn \$6.00

## Five Gentlemen of Japan: The Portrait of a Nation's Character

Through an analysis of five Japanese, from the Emperor to a steel worker and a farmer, the former head of *Time's* Tokyo bureau shows what liberal Japan is doing to change its character and what help and hindrance lie in the nation's past.

by Frank Gibney \$4.00

## Contemporary Foreign Governments

The ninth revision of a text by Officers of the Department of Social Sciences, USMA. In preparing this edition, the authors have attempted to present an adequate analysis of all essential elements in the present confused political world. The new volume brings us up to date to include a study of the United Nations and National Security. Other chapters deal with England, France, Germany, Russia, and Japan to include the postwar period.

by H. Beukema & Associates \$5.50

## OUT OF STEP

A study of young delinquent soldiers in wartime; their offenses, their background, and their treatment under an Army experiment conducted in the British army. The author lived with two hundred persistent army offenders in an experimental camp for two years. The methods of training by which some remarkable successes were achieved are described in detail.

by Joseph Trenaman \$4.75

## The Armor of Organization

According to the author, misorganization of the Armed Forces has laid a heavy toll of blood and wealth in past wars. In the next war, it may be the margin between defeat and victory. The nation can no longer afford this waste. The Armed Forces must put on the armor of organization. This book tells how and why this is so, and what to do about it.

by Alvin Brown \$5.50

## FLYING SAUCERS

In this book a top-flight scientist who has seen many a so-called flying saucer himself explodes every one of the current myths about their nature and origin. People who like to be scared or mystified may not want to agree with what Dr. Menzel, Professor of Astrophysics, Harvard, has to say—but everyone who wants to know the real answer will find it in these pages. And the answer banishes forever the "little men," the foreign power's guided missiles, the space ships, and all the other highly colored scare stories.

by Donald H. Menzel \$4.75

## MODERN ASIA EXPLAINED

In spite of modern methods of communication which have opened up all corners of the globe to travelers, popular misconceptions about the East still linger. It is to remove these misunderstandings that this book has been written, giving an account of the development and aspirations of the Asiatic states which have recently freed themselves or been freed from Western colonization, but which have at the same time exposed themselves to Communist penetration.

by W. R. McAuliffe \$3.25

## Generals & Admirals

A history of amphibious command from the time of Elizabeth to the present for the purpose of clarifying the contemporary controversy over unified command. By a captain in the British navy. Maps. 192 pages.

by John Creswell \$4.00

## MAPS & MAP MAKERS

A history of maps and their makers from the earliest times to the present, with a collectors' treasure chest of old map reproductions, many in color. With 100 illustrations, a bibliography, and an index.

by R. V. Tooley \$7.50

## WORLD WITHOUT END: The Middle East

Hungarian-born Emil Lengyel knows the Middle East from personal experience. He covers it from Iran to Turkey, from the Anglo-Egyptian Sudan to the Black Sea. He explains the various cultures—Arabic, Turkish, Iranian, and Jewish, and shows how oil, the Suez Canal, and the Straits have made this a key spot in world politics. With a map and index.

by Emil Lengyel \$4.50

## THE MONGOL EMPIRE

The author, herein, tells the story of Genghis Khan and the world he made. A careful contrast is drawn between Genghis Khan and Tamerlane by the historian. Kublai Khan, a lesser known grandson, although a conqueror who lived off the spoils, is pointed up as a wise ruler who brought unparalleled prosperity to China. No comparisons with modern history are made; however, one general conclusion is reached: once a Genghis Khan enslaves half a world, it is almost inevitable that a Tamerlane will come along to torture it.—*Time*.

by Michael Praudin \$8.00

## OUR LOVE AFFAIR WITH GERMANY

The novelist, author of *Walk in Darkness*, etc., spent some time in postwar Germany trying to foster democratic ideals. He says, bluntly, that it is the Nazis we're wooing, not the democratic citizens, and gives names and facts to back up his alarming charges.

by Hans Habe \$3.00

## WORLD WIDE MONEY CONVERTER & TIPPING GUIDE

A pocket-sized guide to foreign currency based on the latest exchange rates, showing how to convert dollars into money of all countries open to American travelers and vice versa. It covers almost 100 countries by index and cross index. A big help to Army personnel.

by Richard Joseph \$1.00

## CONTAINMENT OR LIBERATION

The author of "The Managerial Revolution" contends that our "containment" policy toward Communism is futile—our choice is appeasement or liberation of the Soviet-dominated countries, even the Ukraine, that resent the Russian yoke.

by James Burnham \$3.50

## THE ORIGINAL CONFEDERATE COLT: The Story of the Leech & Rigdon, Rigdon - Ansley Revolvers

The first of a series of monographs on Confederate handguns. It identifies positively all Confederate Colts. Illustrated in halftone and line.

by W. A. Albaugh  
and R. O. Steuart \$5.00

you asked for them . . . !!

# Binders for **ARMOR**

Many requests for binders for ARMOR have been received during the past several years. At long last a satisfactory one has been secured for protection of your coveted back issues. This binder will hold twelve issues and is tailored to fit ARMOR. It is made of heavy drill weight imitation leather in brown, stiff board, square corners, lined with a water resistant paper inside and supplied with a multiple mechanism capable of holding up to two years' supply of ARMOR. This is ideal for protecting those oft-handled and much perused day-room and library copies.

Also, it is ideal for protecting your personal copies and keeping them collected for a ready reference. The front cover is decorated with a gold imprint of the title ARMOR and the Armor seal in outline.

USE THE ORDER FORM BELOW

\$2.50

<b>ORDER FORM</b>	BOOKS	Armor
	LANGUAGES	
	BINDERS	1727 K Street, N.W., Washington 6, D. C.
Please send me the following:		
_____	NAME (Please Print)	
_____	ADDRESS (Street or Box number)	
_____	CITY (Town or APO)	
_____	STATE	
_____	<input type="checkbox"/> I enclose \$.....	
_____	<input type="checkbox"/> Bill me. (Subscribers only.)	
_____	<input type="checkbox"/> Bill unit fund.	

## THE UNITED STATES ARMY IN WORLD WAR II

### THE CHINA-BURMA-INDIA THEATER

# Stilwell's Mission to China

by Charles F. Romanus and Riley Sunderland

This is the first of a three-volume subseries telling the history of the U.S. Army in the China-Burma-India Theater of Operations and is part of the larger series, THE UNITED STATES ARMY IN WORLD WAR II, now being compiled by the Office of the Chief of Military History, Department of the Army. Based principally on War Department records, this volume narrates the high-level planning and

policy debates over China in the 1941-1943 period. Its central theme is the story of General Joseph W. Stilwell's efforts to carry out the orders of General George C. Marshall to improve the combat efficiency of the Chinese Army and to increase the effectiveness of U.S. aid to China. New light is thrown on the Stilwell story by use of the general's personal papers, which were opened for the first time in May of 1950 and consulted by the authors.

The volume traces the origins of the prewar U.S. program of equipping thirty Chinese divisions, a 500-plane Chinese air force, and a line of communications to China from Rangoon. It describes the complicated Allied command situation that developed in China, Burma, and India, and details the First Burma Campaign. New Japanese material gives a glimpse of the other side of the story. Stilwell's futile efforts to command three Chinese armies in Burma, under the overall command of General Sir Harold R. L. G. Alexander, are narrated. After walking out of Burma to avoid being trapped by the Japanese, Stilwell presented major proposals to the Chinese, American, and British Governments. The full text of these proposals, found in Stilwell's personal papers, is presented for the first time.

The book discusses the cause-and-effect relationship of the Generalissimo's famous "Three Demands" to his alliance with the United States. It sets forth Stilwell's plans for a Burma campaign to break the blockade of China and his analysis of what each of the three Allies—Britain, China, and America—could contribute in a new campaign. Concurrently with his efforts to persuade Britain, China, and the United States to agree on a Far Eastern strategy, Stilwell created and expanded his own U.S. Army theater of operations. The creation of the Tenth Air Force, the China Air Task Force, the Services of Supply, CBI, and Ramgarh Training Center is described.

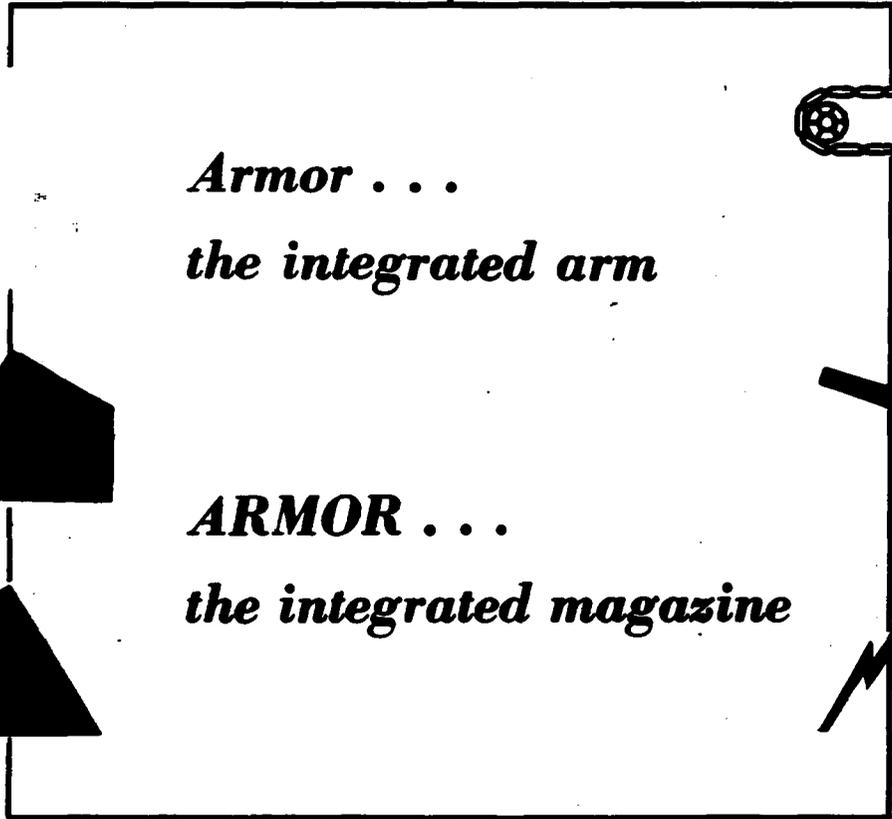
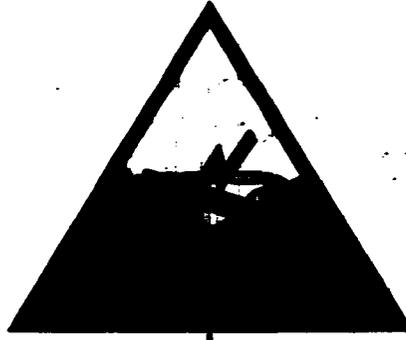
441 pp.

\$5.00

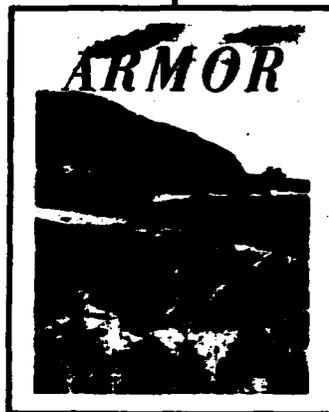
Order From The Book Department

**PUBLISHED VOLUMES IN THE ARMY SERIES**

- The Army Ground Forces
  - The Organization of Ground Combat Troops
  - The Procurement and Training of Ground Combat Troops
- The War in the Pacific
  - Okinawa: The Last Battle
  - Guadaleanal: The First Offensive
  - The Approach to the Philippines
- The European Theater of Operations
  - The Lorraine Campaign
  - Cross-Channel Attack
- The War Department
  - Chief of Staff: Prewar Plans and Preparations
  - Washington Command Post: The Operations Division
- The Technical Services
  - Transportation Corps: Responsibilities, Organization, and Operations
- Pictorial Record
  - The War Against Germany and Italy: Mediterranean and Adjacent Areas
  - The War Against Germany: Europe and Adjacent Areas
  - The War Against Japan
- The Middle East Theater
  - The Persian Corridor and Aid to Russia
- (Special Study)
  - Three Battles: Arncliffe, Altuzzo, and Schmidt
- The China-Burma-India Theater
  - Stilwell's Mission to China



*The  
Magazine of  
Mobile Warfare  
Covering the*



*mounted,  
mobile,  
self propelled  
field*