THE SECRET OF FUTURE VICTORIES

Paul F. Gorman
General, U.S. Army, Retired



A MILITARY CLASSIC REPRINT
U.S. ARMY COMMAND AND GENERAL STAFF COLLEGE PRESS
FORT LEAVENWORTH, KANSAS
1994

U.S. ARMY COMMAND AND GENERAL STAFF COLLEGE PRESS

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IDA PAPER P-2653

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Paul F. Gorman
General, USA (Retired)

February 1992

Approved for public release; distribution unlimited.



INSTITUTE FOR DEFENSE ANALYSES
Contract MDA 903 89 C 0003
DARPA Assignment A-132

Library of Congress Cataloging-in-Publication Data

Gorman, Paul F.
The secret of future victories / Paul F. Gorman.
p. cm. — (IDA paper ; P-2653)
"February 1992."
Includes bibliographical references.
1. Military education—United States—History—20th century.
2. United States. Army—Maneuvers—History—20th century.
3. Marshall, George C. (George Catlett), 1880–1959). 4. McNair, Lesley James, 1883–1944. 5. DePuy, William E. (William Eugene), 1919– . I. Institute for Defense Analyses. II. Title.
III. Series.
U408.3.G67 1993 93-34272
355'.007'073—dc20 CIP

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REPORT DOCUMENTATION PAGE

Form Approved OMB No. 0704-0188

Public Reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

1. AGENCY USE ONLY *(Leave blank)*	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	February 1992	Final--June 1991-January 1992

4. TITLE AND SUBTITLE

The Secret of Future Victories

5. FUNDING NUMBERS

C - MDA 903 89 C 0003

A - A-132

6. AUTHOR(S)

Paul F. Gorman

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

Institute for Defense Analyses
1801 N. Beauregard St.
Alexandria, VA 22311-1772

8. PERFORMING ORGANIZATION REPORT NUMBER

IDA Paper P-2653

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

DARPA
3701 N. Fairfax Drive
Arlington, VA 22204-1714

10. SPONSORING/MONITORING AGENCY REPORT NUMBER

11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION/AVAILABILITY STATEMENT

Approved for public release; distribution unlimited.

12b. DISTRIBUTION CODE

13. ABSTRACT *(Maximum 200 words)*

The Army of DESERT STORM owed much to three past trainers of the Army. For much of his career, George C. Marshall argued for field exercises to supplement institutional training; once raised to high command, he ordered large-scale maneuvers. World War II was won by cogent strategy, equipment good enough and plentiful, generally sound tactical doctrine, and the methodical training devised by Lesley J. McNair, who equated "Realism in training" to large maneuvers and live-fire exercises. McNair's methodical plan for producing divisions faltered in 1944 under the strian of battle losses, but remained the basis for Army training for Korea and Vietnam. In 1973, William E. DePuy's TRADOC undertook to insure that the Army could train not only leaders at the strategic and operational levels who could draw arrows on the map to discomfit any enemy, but also units capable of advancing those arrows. Future victories depend on *both* superb professional schools, and maneuver units trained and commanded well enough that battle-seasoning outpaces battle losses.

14. SUBJECT TERMS

McNair, Marshall, Patton, DePuy, Army Training, World War II, Korea, Vietnam, Buna, Kasserine, Infantry, Close Combat, Rifle Squad, Rifle Platoon, Force Design, Tank, Tank Destroyers, Antitank Weapons, Armor, Artillery, Combined Arms, Tactical Engagement Simulation (TES), TRADOC, MILES, CTC, BCTP

15. NUMBER OF PAGES

225

16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	SAR

FOREWORD

The performance of our soldiers, sailors, airmen, and marines--individual combatants and combat units--in Just Cause and Desert Storm provides self-evident proof that today's combat forces are shaped and prepared by relevant, realistic training. The startling "first mission" effectiveness of those forces is less self-evident. In these battles, and in contrast to past conflicts, political and military leaders demanded, and the forces delivered, peak performance from the outset of combat operations. Key decisions of Defense and combat leaders from the President to the platoon leader reflected high confidence in "first mission" success in demanding, complex combat operations.

In past conflicts, only combat veterans and units proven in combat warranted that confidence. Today, the quality and focus of training raises soldiers, sailors, airmen, and marines to the performance levels of "combat veteran" before actual combat begins. That is the goal and the product of realistic training at each level.

While today we take it for granted that realistic peacetime training--of individuals, commanders, and units--is both feasible and essential, it was not always so. General Gorman's work brings to life the vision, determination, and effect of key leaders--Marshall, McNair, DePuy--who conceived, nurtured, and drove the evolution of new standards of training that shapes collections of individuals into effective combat units before they face the lethality of real battlefields.

But there are additional important chapters to be recorded. The writer of a future history will tell us about General Gorman's contributions to visionary concepts of training and how he helped to implement them in the real world by taking advantage of technologies not dreamed of by Marshall, McNair, or DePuy. General Gorman, as the DCS for Training at TRADOC, was an important part of making the Army's National Training Center a reality. As Commander of the 8th Infantry Division in Germany, he raised small unit tactical field training to new levels of effectiveness. After retirement from active duty, he continued to be an effective proponent of using new technologies to enhance realistic training at all levels with his support of SIMNET and of a Joint Tactical Engagement Simulation System that will link the training areas of the military services in the Southwest United States.

General Gorman recognizes that we are on the leading edge of developing and fielding powerful new training technologies. He sees that simulation technology, instrumentation of live combat vehicles, data connectivity, and displays can provide a seamless environment that optimizes training opportunities for each level from the soldier in an armored vehicle or the pilot in a fighter cockpit to senior-level commanders and battle staffs.

First mission effectiveness has become a necessary standard. Neither military leaders nor the American public will accept the terrible price of growing to combat competence during the battle on lethal air, land, and sea battlefields. In this paper, General Gorman shows us that Marshall, McNair, and DePuy started an evolution that is constantly accelerating.

General Larry D. Welch, USAF (Retired)
President, Institute for Defense Analyses

ABSTRACT

The Army of DESERT STORM owed much to three past trainers of the Army. For much of his career, George C. Marshall argued for field exercises to supplement institutional training; once raised to high command, he ordered large-scale maneuvers. World War II was won by cogent strategy, equipment good enough and plentiful, generally sound tactical doctrine, and the methodical training devised by Lesley J. McNair, who equated "realism in training" to large maneuvers and live-fire exercises. McNair's methodical plan for producing divisions faltered in 1944 under the strain of battle losses, but remained the basis for Army training for Korea and Vietnam. In 1973, William E. DePuy's TRADOC undertook to insure that the Army could train not only leaders at the strategic and operational levels who could draw arrows on the map to discomfit any enemy, but also units capable of advancing those arrows. Future victories depend on *both* superb professional schools, and maneuver units trained and commanded well enough that battle-seasoning outpaces battle losses.

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GLOSSARY

AAF	Army Air Forces, General Arnold's Command, established March 1942
AEF	American Expeditionary Force, General Pershing's command in France during World War I
AFB	Air Force Base
AGF	Army Ground Forces, Lt. Gen McNair's command, charged with training ground combat and combat support units. Established in March 1942
APC	armored personnel carrier
ASF	Army Service Forces, Lt. Gen. Somervell's command, charged with training Army combat service support units. Established March 1942
ATP	Army Training Program, successor to the MTP, an annual curriculum for unit training
BAR	Browning Automatic Rifle, a relatively heavy but accurate .30 caliber shoulder arm of WWI vintage that, with a shoulder rest and a bipod, was issued to rifle squads to function as a light machine gun in WWII and Korea
battle simulation	Constructive tactical engagement simulation. A model or construct of combat used for training battle staffs, employing either mechanical means, such as a map board and game apparatus, or a computer-based model and graphic displays. See TES
Bazooka	The WWII light antitank weapon, a shoulder-fired 2.75-inch antitank rocket
BCTP	Battle Command Training Program, constructive TES used for training division and corps battle staffs, conducted by a team from the Command and General Staff College, Fort Leavenworth
Benning	Fort Benning, GA, site of the Army's Infantry School
BFDT	Board for Dynamic Training, 1971
BDS-D	Battlefield Distributed Simulation-Developmental. A proposed "electronic battlefield" upon which new technology or new concepts could be evaluated in virtual combat.
Big Red One	A sobriquet for the U.S. 1st Infantry Division
Blitzkrieg	Lightning War, the press term for the initial Hitlerian campaigns
C&GSC	Command and General Staff College

C-AMA	California-Arizona Maneuver Area, the large area of the southwestern desert used by AGF for maneuvers in WWII
CAC	Combined Arms Center, Fort Leavenworth, KS, commanded by the Deputy Commander, TRADOC
CAMMS	Computer Assisted Map Maneuver System, a battle simulation using a central processor for distributed participant battle staffs
CATB	Combat Arms Training Board, 1971-1977
CATTS	Combined Arms Tactical Training Simulation, a computer based battle simulation used in institutional training for battle staffs
CCA CCB CCC	Designations for three Combat Commands that were to the U.S. armored division what the infantry regiments were to the infantry division
CDC	Combat Development Command
CDEC	U.S. Army Combat Development and Experimentation Command, Fort Hunter Liggett, CA
claymore	An anti-personnel mine exploded on electric command
collective training	Training for a crew, team, a subunit, or unit, whether by an institution such as an Army School or Combat Training Center, or by a parent unit
COMZ	Communications Zone, that part of a Theater of War in which activities are mainly logistics and administration, vice combat
CONARC	Continental Army Command
constructive TES	see TES
CONUS	Continental United States (excludes Hawaii and Alaska)
Corps Area	Between World Wars I and II, a CONUS territorial command for administration of the Army's responsibilities for active and reserve forces
Croix de Guerre	French Cross of War, awarded to valorous units as well as individuals
CTC	Combat Training Center, referring to the facilities dedicated to subsistent Tactical Engagement Simulation at Fort Irwin, CA, Fort Chaffee, AR, and Hohenfels, Germany.
DARPA	Defense Advanced Research Projects Agency
DESERT STORM	Military operations against Iraq, 1991
DIADEM	Code name for the allied offensive against Rome, 1944
djebel	In Tunisia, a hill, or ridge
DRAGON	Shoulder-fired medium antitank guided missile
DSC	Distinguished Service Cross, the Army's second highest award for valor
Feldwebel	A German noncomissioned officer

fillers	Personnel assigned from other commands to augment a unit's strength
FIRST BATTLE	Manual battle simulation for division/corps
FORSCOM	U.S. Army Forces Command, to which Army units in CONUS were subordinated by the 1973 reorganization of the Army
FRG	Federal Republic of Germany (West Germany)
G-3	The General Staff section or officer charged with plans and operations
GHQ	General Headquarters, U.S. Army, set up by General Marshall (July 1940) to supervise the mobilizing Army
GPS	Global Positioning System, a navigation means in which terrestrial position (e.g., latitude and longitude) is determined by reference to signals from an array of satellites
HASC	House Armed Services Committee, U.S. Congress
individual training	Training of an individual, whether in an institution of the training base, or in a unit
institutional training	Training advantaged by a fixed facility, faculty, and curriculum, with trainees moving through seriatim.
I-Port	Individual Portal into Virtual Reality, a mechanism for inserting an individual into a synthetic environment.
HAW	Heavy Antitank Weapon (e.g., TOW)
JTESS	Joint Tactical Engagement Simulation System
LAW	Light Antitank Weapon (e.g., bazooka or M-72 rocket)
Leavenworth	Fort Leavenworth, KS, site of the Army's Command and General Staff College
MAW	Medium Antitank Weapon (e.g., DRAGON)
MILES	Multiple Integrated Laser Engagement System, a subsistent tactical engagement
MTP	Mobilization Training Program, the AGF curriculum for newly activated divisions
NAS	Naval Air Station
NCO	Noncommissioned officer
OPFOR	In the U.S. Army, Opposition Force, the "enemy" for training
Panzerkampf-wagen	PKW, "armored fighting vehicle"; thus PKW IV, PKW V
PARFOX	A foxhole with a frontal parapet designed to conceal and to protect the occupant(s) from direct fire to their front. The "DePuy foxhole"
PEGASUS	Manual battle simulation for battalion/brigade battle staffs
REALTRAIN	An optical, subsistent tactical engagement simulation system for infantry and armor platoons and company teams

RED FLAG	A training exercise that exploits TES conducted repetitively at Nellis AFB, NV, for squadrons of the USAF Tactical Air Command.
REFORGER	REturn of FORces to GERmany, an annual NATO exercise
Riley	Fort Riley, KS, the former site of the Army's cavalry school
ROCID	Reorganization of the Current Infantry Division, the so-called Pentomic Division of 1956
ROAD	Reorganization of the Army Division, the broad 1963 realignment of all type divisions for conventional and nuclear warfare
RTC	Replacement Training Center, a CONUS institutional training facility for soldiers as individuals
SACEUR	Supreme Allied Commander Europe
SCOPES	An optical, subsistent tactical engagement simulation for rifle squads
Sill	Fort Sill, OK, site of the Army's Artillery School
SIMNET	Large-scale Simulator Network, a successful DARPA-Army technology demonstration of virtual TES; a synthetic battlefield environment
subsistent TES	see TES
suppression	Temporary or transient degradation of the performance of a weapons system, below the level needed to fulfill its mission objectives, by an opposing force (JCS Pub 1)
synthetic environment	A man-generated array of sensory inputs that projects an individual or collective into a virtual reality
TABLE VIII	Course for tank crew qualification firing
TCATA	TRADOC Combined Arms Test Agency at Fort Hood, TX.
TES	Tactical Engagement Simulation: simulation of close combat. Three forms of TES are presently in use: (1) **constructive TES**, mathematical or analog constructs, or computer models of battles in which engagements are represented, often aggregated; (2) **subsistent TES**, instrumented ranges or maneuver areas for actual military vehicles in which engagements are singly simulated; and (3) **virtual TES**, manned, networked simulators within wholly synthetic, computer-generated battle environments in which engagements are singly simulated. "Subsistent" means "being" or "real," the antonym of "virtual" or "unreal."
TO&E	Table of Organization and Equipment, the document that officially establishes the authorizations for personnel and equipment for each type of unit in the U.S. Army
TOP GUN	The USN fighter weapons school at Miramar NAS, CA, that employs TES to teach air-to-air combat
TOW	Tube-launched Optically-tracked Wire-guided antitank missile, the Army's current Heavy Antitank Weapon

TRADOC	U.S. Army Training and Doctrine Command, 1973 to present. First commander, 1973-1977: General W.E. DePuy
unit training	Training conducted in a military unit, either for individuals or collectives
USAF	U.S. Air Force
USAREUR	U.S. Army Europe, Army component of the U.S. European Command
USN	U.S. Navy
USMC	U.S. Marine Corps
virtual TES	see TES

SUMMARY

For three decades following 1940, the United States Army trained per a methodical, progressive system devised for General George C. Marshall by Lieutenant General Lesley J. McNair, a system that abhorred academic theorizing, or surrogates for actual equipment, and that equated "realism in training" to large maneuvers to train senior commanders and staffs in the operational art, and live-fire exercises to teach tactics and techniques to small units. In the mid-1970's, reforms of that system instituted under General William E. DePuy introduced two novel forms of simulating tactical engagements. These innovations had their origins in traumatic battle experiences of 1944-1945, and in the shortcomings of Army training in two wars in Asia. The Army of DESERT STORM has been the beneficiary.

To understand the Army of today, or to address its future, one has to begin with Marshall's vision: during the 1930's he argued vehemently, if vainly, for field exercises for units to supplement institutional training for professional officers, and once raised to high command, he bent his energies to bringing such a program into being. McNair was his principal lieutenant in that endeavor. What wrought victory in World War II was cogent strategy, equipment good enough and plentiful, generally sound tactical doctrine, and the training system McNair put into effect. But victory also derived from the superiority of American artillery, from field commanders like Patton and Eichelberger, and from the sacrifices of American infantrymen who led the way into the strongholds of Italy, Germany, and Japan. McNair's masterful plan for training divisions to fund Marshall's wartime strategy faltered under the strain of battle losses largely sustained because, against determined and skillful foes, the Army deployed infantrymen inadequately trained in teamwork for close combat.

DePuy modernized and extended Army training methods. In the mid-1970's, DePuy's TRADOC undertook to insure that the Army could train not only leaders at the strategic and operational levels who could draw arrows on the map to discomfit any enemy of the United States, but also units capable of advancing the point of those arrows. Future victories depend on the Army's having *both* superb professional schools, and maneuver units trained and commanded well enough that battle seasoning surely outpaces battle losses.

I. MARSHALL'S VISION: THE TITLE REED OF HIGH COMMAND

In May, 1945, General George C. Marshall, Chief of Staff of the Army, forwarded to General John J. Pershing, his long-retired predecessor, a message from General Eisenhower, the Supreme Allied Commander Europe, attributing the defeat of the German Army in large measure to Pershing's 1922 decisions to reform the Army's schools:[1]

> . . . a very important factor in American success has been the tactical judgement and skill and the identical command and staff conceptions of our regimental, divisional, corps and army commanders. These abilities and common doctrine have facilitated smoothness and speed in handling large formations and permitted a crushing application of tactical power. They have resulted directly from our magnificent military educational system, a system that was completely reorganized and expanded under your wise leadership and under your unstinting support. The stamp of Benning, Sill, Riley and Leavenworth is on every American battle in Europe and Africa.

A. THE CONTRIBUTION OF ARMY SCHOOLS

George Marshall had been assigned to Pershing's staff in the AEF in France, served as Pershing's aide-de-camp from 1919 to 1924, and had corresponded regularly with him over the years thereafter (Fig. I-1). No doubt in 1945 he wanted the old general to share in the triumph of the U.S. Army. In 1922, General Pershing had appointed a Board of Officers under Brigadier General E.F. McGlachlin to reexamine military education, which Pershing then considered excessively expensive in terms of funds and officer time, and inefficient, repetitive, and administratively cumbersome.[2] The McGlachlin Board recommended, and Pershing approved, the hierarchy of Army schools that has survived in TRADOC to this day. There was to be a basic and advanced branch school--each course somewhat less than a year, taught, for example, at Forts Benning for infantry officers, Sill for artillery officers, or Riley for cavalry officers. Selected officers

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1 Nenninger, T.K., "The Fort Leavenworth Schools," Thesis for Doctor of Philosophy in History, University of Wisconsin, 1974, pp. 336-339.

2 Ibid. General McGlachlin had been Pershing's artillery commander in the AEF.



Figure I-1. Brigadier General George C. Marshall, 1938

were then to progress through a 2-year all-branches program at the Command and General Staff School at Leavenworth. Finally, an elite few graduates of Leavenworth would eventually attend a 1-year course at the Army War College in Washington.

1. Eisenhower and Churchill Deemed Schools Central

General Eisenhower was one of the first graduates of the 2-year course at Leavenworth, and in later years expressed his gratitude for the opportunities it opened to him:[3]

> I think there is no activity more important in a man's preparation for war than his periodic return to school duty, not so much because of what he learns in mere facts and knowledge as because during that period he is relieved of the ordinary routine duties. . . . For that period he is given an opportunity to think, think in terms of war, without limit on the scope of his ideas.

After World War II, Winston Churchill came to the United States to receive, with his customary grace, plaudits and even honorary citizenship from a grateful American people. In his speeches, he warned of the Iron Curtain, and the tensions it portended, and admonished preserving and enhancing what he regarded as the roots of U.S. military prowess:[4]

> That you should have been able to preserve the art not only of creating mighty armies almost at the stroke of a wand--but of leading and guiding those armies upon a scale incomparably greater than anything that was prepared for or even dreamed of, constitutes a gift made by the officer corps of the United States to their nation in time of trouble. . . . I shall always urge that the tendency in the future should be to prolong courses of instruction at the colleges rather than to abridge them and to equip our young officers with that special technical professional knowledge which soldiers have a right to expect from those who give them orders, if necessary, to go to their deaths. Professional attainment, based on prolonged study, and collective study at colleges, rank by rank, and age by age--those are the title reeds of the commanders of the future armies, and the secret of future victories.

The encomiums of Eisenhower and Churchill, repeated, paraphrased, and embellished upon in countless lectures, speeches, and articles, have become part of the lore

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3 Madden, R.W., "The Making of a General of the Army," *Army* 40 (12 1990): 52-57.

4 *Report of the Panel on Military Education of the One Hundreth Congress*, Committee on Armed Services, House of Representatives, One Hundred First Congress, First Session, April 21, 1989, U.S. GPO, 1989, p. 12.

of the military profession in the United States, and an obligatory citation for any of the several reassessments of its schools that have been undertaken since World War II.

The most recent such reassessment was that of the Armed Services Committee of the House of Representatives, which in 1987 appointed a panel chaired by Ike Skelton to inquire into how well military education supported unification of the armed services, as sought by the Goldwater-Nichols legislation of 1986, and "the ability of the current Department of Defense military education system to develop professional military strategists, joint warfighters, and tacticians."[5] The Skelton Panel spent over a year at its task, and in the end came down strongly for expanding and extending professional military schooling.

For the first time since before World War II, the national military policy of the United States will have to be devised amid uncertainty as to the identity and locus of threat. Representative Ike Skelton has stated that in those circumstances "all of us, including our military leaders, have much to learn from America's history," and urged that military schools be returned to the excellence they enjoyed in the 1920's and 1930's, when they produced George C. Marshall, "the architect of victory in World War II."[6] In five speeches to the House, Chairman Skelton recalled the "outstanding strategic thinkers" of yesteryear: Alfred Thayer Mahan, "the father of modern naval warfare"; G.C. Marshall; and Maxwell Taylor, the "man responsible for today's NATO strategy of flexible response." But, he asked, "Is our professional military education such that it would be impossible for a Mahan, Marshall, or Taylor to make a contribution? Does our military spend so much time studying weapon systems and tactics that there is no room for strategic thinking?"[7] Four of the five titles Ike Skelton assigned to his speeches drew attention to the need to develop strategists through better schooling.[8] The Chairman also made it clear that he considered General Marshall the greatest American strategist of World War II, that Marshall was a proper model for the development of present-day professional officers, and

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5 Ibid., p. v.

6 Skelton, Ike, "American Strategy: A Worthy Past, an Uncertain Future," *Congressional Record* 133 (No. 179, November 9, 1987).

7 Skelton, Ike, "Military Strategy: Unfocused, Unstudied, Unlearned," *Congressional Record* 133 (No. 155, October 6, 1987).

8 Skelton, I., ibid.; also his "Strategy and Military Education: Concerns, Trends, and Unanswered Questions," *Congressional Record* 133 (No. 168, October 26, 1987). Skelton, Ike, "Strategy and Officer Education: the Weak Link," *Congressional Record* 133 (No. 171, October 29, 1987). The Panel provided the author the text of a fifth speech, entitled "The HASC Panel on Military Education: Focusing the Spotlight," but there is no notation thereon indicating when it was delivered.

that Marshall's era was the last period when military strategy was properly tended. In particular, he urged attention to the years between the World Wars, to the 1920's and 1930's:[9]

> A case can be made that if in the future resources constraints become tighter, better PME [professional military education] can help offset these constraints. After the Second World War, former Secretary of War Robert Patterson observed:
>
> ". . .in the 1920's and 1930's the Army was too poor to hold maneuvers. Schools cost very little, so the Army, denied the training opportunities afforded by maneuvers, went to the limit in sending soldiers to school. It never made a better investment. . . ."
>
> The 1930's appear to have been a relative high-water mark for the education and development of military thought in the United States.

Congressman Skelton held that "strategic poverty" crippled the effectiveness of U.S. armed forces after World War II, and that it stemmed directly from flawed military education:[10]

> People think as they are taught to think, and do what they are taught to do. When the actions of military leaders are inappropriate or ineffective, it is usually because they did not think well enough or long enough. A leader who asks the wrong questions can be assured of getting the wrong answers. Asking the right questions means asking about strategy, and that is too often left undone. . . .

The Skelton Panel's conclusions and recommendations were consistent with Winston Churchill's supposition that military professionalism is "based on prolonged study, and collective study at colleges, rank by rank, and age by age." Chairman Skelton wrote that he was hopeful that the Panel's proposals would

> . . . strengthen the focus of all service professional military education schools on joint matters and of senior service schools on national military strategy. . . . A revamped National War College within a National Center for Strategic Studies and an intensive temporary duty Armed Forces Staff College, both for graduates of service colleges, should improve education in national security strategy and joint operations.[11]

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9 *Report of the Panel on Military Education of the One Hundreth Congress*, Committee on Armed Services, H.o.R., One Hundred First Congress, First Session, April 21, 1989, U.S. GPO, pp. 2-3, 18, 25.

10 Skelton, Ike, "Strategy and Officer Education: the Weak Link," *Congressional Record* 133 (No. 171, October 29, 1987).

11 Skelton, Ike, Letter to author, 5 May 1989.

Implicitly, the HASC Panel would have the services go "to the limit" with officer schooling, if need be using their schools and the new joint schools to offset budget shortfalls in structure or readiness. Explicitly, they were to broaden courses and devote more officer time to schooling with the aim of developing strategists. To the degree that the HASC Panel on Military Education believed that these recommendations were congruent with the educational concepts of George Catlett Marshall, it misread history, and misconstrued Marshall's ideas of how to prepare commanders and staff officers for future war.

2. Marshall Feared the Schools Were a Liability

George C. Marshall was indeed a strategist of the first rank. He was a student in the Army's officer schools only as a lieutenant, but was involved with them throughout his career. What prepared him for his responsibilities as President Roosevelt's wartime leader of the Army and the Army Air Forces, and President Truman's Secretary of State and Secretary of Defense, was mainly his own keen professionalism. Before World War II, he had earned a reputation as a master trainer and tactician, and became known as a critic of Army schools, holding that they taught war's grammar, but not its logic. While he clearly recognized their importance for imparting what Churchill termed the "special technical professional knowledge which soldiers have a right to expect from those who give them orders," Marshall also felt that the schools encumbered graduates with elaborate theory and time-consuming technique--especially that of producing complex, written operations orders--so inappropriate for contemporary warfare that these might in fact cause chaos in the opening campaign of a war.

George Marshall became Acting Chief of Staff in July 1939, and was sworn in as Chief of Staff on 1 September 1939, the day the Germans invaded Poland. Consistent with the studied non-military style of President Roosevelt's Administration in those days, he took his oath in civilian attire, and shortly thereafter testified before Congress in favor of the Burke-Wadsworth conscription bill out of uniform. The newly promoted general headed a Regular Army of some 189,000; the National Guard, none of it federalized, had a total strength of 199,000. About one-fourth of the Regulars were stationed outside the continental United States, and the remainder dispersed among 130 posts, mostly in battalion-size garrisons. Stationed in Texas against trouble out of Mexico were two understrength Regular divisions, one of them horse cavalry; no other formations in the United States were assigned specific contingency missions. Corps area headquarters were

administrative, territorial commands, and field armies existed only on paper. For land combat, there were immediately available three half-strength infantry divisions, two cavalry "divisions" of about 1,200 men each, and one half-strength mechanized brigade.[12] Six infantry divisions were at cadre strength. Soldiers were issued the M1903 Springfield rifle, wore the British-style steel helmet, and depended upon the .50-caliber machine gun for antitank defense [in February 1939, the Army's inventory of Gun, Antitank, 37 mm was one each].[13]

General Malin Craig, whom Marshall succeeded as Chief of Staff, wrote in his final annual report that it might be already too late for the American Army:[14]

> What transpires on prospective battlefields is influenced vitally years before in the councils of the staff and in the legislative halls of Congress. Time is the only thing that may be irrevocably lost, and it is the first thing lost sight of in the seductive false security of peaceful times. . . .
>
> The sums appropriated this year will not be fully transformed into military power for two years. Persons who state that they see no threat to the peace of the United States would hesitate to make that forecast through a two-year period.

George Marshall knew well that the task of readying his Army for war would involve a difficult, if not impossible, race against time, and that to win it he had to muster all the Army's resources. It was not just that money was unavailable to buy needed equipment: much of that equipment had yet to be developed; manufacturing facilities for it were nonexistent; and, above all, the Army's citizen-soldiers needed to be trained. When hostilities began in Europe, schooling for professional officers came to be accepted as secondary to readiness in the Army's units. In February 1940, George Marshall decapitated Pershing's school system, suspending classes at Leavenworth to provide more officers for the expanding force and upcoming large-unit maneuvers, and directing Leavenworth's faculty to work full time on the production of manuals incorporating

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12 Kreidberg, M.A., and Henry, M.G., *History of Military Mobilization in the United States Army 1775-1945*, Department of the Army, DA PAM-NO. 20-212, November 1955. 548-552. Cf. Blumenson, M., "Kasserine Pass, 30 January-22 February 1943." In *America's First Battles 1776-1965*, eds., Heller, C.E., and Stofft, W.A., Lawrence, KS: University Press of Kansas, 1986, p. 231.

13 Weigley, R.F., *History of the United States Army*, New York: MacMillan, 1967, pp. 419-420. The 37 mm was a copy of the German *PanzerAbwehrKannonen* 36, and by the time U.S. Army Ordnance had it in production, was obsolete.

14 Watson, M.S., *Chief of Staff: Prewar Plans and Preparations*, United States Army in World War II, Washington. DC: The War Department, Office of the Chief of Military History, Dept. of the Army, 1950, p. 35.

modern doctrine.[15] A few months later, Marshall closed the Army War College, and moved Leavenworth's Commandant, Major General Lesley J. McNair, into its facilities to form Army General Headquarters (GHQ); theoretically, GHQ was to serve as Marshall's field headquarters, and McNair was appointed its Chief of Staff. Among other important responsibilities, McNair was to direct the training of the mobilizing Army, and was to conduct further large-scale maneuvers. Marshall assigned as McNair's operations chief Lieutenant Colonel Mark Wayne Clark, whom he had come to know from field training at Vancouver Barracks in 1938.[16]

At Marshall's direction, maneuvers conducted in April 1940, involved 70,000 troops in the first-ever peacetime exercise for field army and corps.[17] Although these large-scale exercises dramatized grave deficiencies in the field-worthiness of the Army, Congress remained reluctant to prepare seriously for war. Appropriations for the Fiscal Year ending 30 June 1941 provided for a total of just 57 replacement aircraft, and in August, 1941, the House of Representatives came close to dismissing the 1-year draftees inducted into the Army under the Selective Service Act of 1940, the extension measure passing by a margin of one vote.[18] Marshall nonetheless persistently sought more and

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15 Pogue, Forrest C., *George C. Marshall: Ordeal and Hope, 1939-1942*, New York: Viking Press, 1965, pp. 90-91. The War College remained closed for the duration of the war, its facilities occupied the while by GHQ and its successor, Army Ground Forces. Marshall later took pride in closing Leavenworth in 1939 because thereby he had caused to be prepared a useful set of modern manuals to guide training, avoiding the embarrassment and difficulties the Army had faced in 1917 and 1918 using borrowed British manuals. Closing officer schools at the outset of war was not unusual--e.g., the Germans had suspended classes at the *Kriegsakademie* in 1914 and 1939--but no modern belligerent was so short of doctrinal publications as the U.S. Army, and that shortage was another indication of its schools being preoccupied with students as opposed to training the force. In 1940, courses at the Command and General Staff College were incorporated into McNair's plan for division activation, and assignment prerequisites for officers with Leavenworth certificates led to reinstitution of a foreshortened version of the Command and General Staff College. Palmer, R.R., Wiley, B.I., and Keast, W.R., *The Procurement and Training of Ground Combat Troops*. United States Army in World War II: The Army Ground Forces, Washington, DC: Historical Division, Department of the Army, 1948, pp. 435, 440, 459, 466.

16 Pogue. Ibid., pp. 82-83. In 1938 Major Mark Clark was assigned the task of critiquing an unsuccessful night attack that Marshall--as usual, acting as Red Commander--had commanded; Clark unexpectedly praised the tactic, and was thereafter well-regarded by Marshall. Pogue, Forrest C., *Education of a General 1880-1939*, ed., Harrison, G., New York: Viking Press, Inc., 1963, p. 316. Cf. Blumenson, M., *Mark Clark*, New York: Congdon & Weed, 1984, pp. 41-42.

17 *American Military History*, ed., Matloff, M., Washington, DC: Office of the Chief of Military History, United States Army, 1969, p. 418.

18 *Military Policy of the United States 1775-1944*, Foreword by Col. H. Beukema, Professor, USMA, West Point, NY: Department of Economics, Government and History, United States Military Academy, 1944, p. 26.

better field training, and devoted the Army's officer schools mainly to the preparation of National Guardsmen and Reservists, or to training cadres for units to be activated.

George Marshall was well acquainted with the Army schools of his time. He had been a student in them only as a lieutenant, when he attended the Infantry and Cavalry School (1906)[19] and the Army Staff College (1907), then both at Fort Leavenworth. But he was selected to remain at Leavenworth on the faculty (1908-1910), and during his four plus years at Leavenworth formed associations which served him in good stead throughout his career--for instance, most of the senior officers with whom he worked in France, 1917-1918, were associates of that period.[20]

In the mid-1920s, watching an officer who had stood first in his class at the Infantry School bungle a field exercise of the 15th Infantry in China, Marshall "had formed an intense desire to get my hands on Benning [the Infantry School],"[21] but an assignment there did not open up until 1927. That year he spent 3 months at the Army War College in Washington as an instructor, but upon the death of his first wife, he was reassigned to Fort Benning as Assistant Commandant of the Infantry School. In 5 years in the latter position Marshall assembled a truly remarkable faculty, brought about broad educational reforms, and prepared a remarkable group of officers for the tests of war that lay ahead:[22]

> As for the Army, it found in Marshall one of those rare teachers who make a difference, who open minds in such a way that they never afterward quite close again or forget the excitement of a new idea. The importance of that influence cannot be statistically measured, but a roll call of the Benning staff and graduates of Marshall's five years there (a quarter of the school's history between the great wars) is studded with the Army high command of World War II and after--Bradley, Collins, Ridgway, Decker, Stilwell, Bolté, Dahlquist, Almond, Van Fleet, Huebner, Paul, Bedell Smith, Bull, Terry Allen, Leven Allen, Eddy, Cota, Moore, Hull, Cook, Timberman, Hildring, Lanham, John R. Deane, and William Dean. Courtney Hodges, while neither a staff member or student, sat with Marshall on the Infantry Board, which studied new weapons for the infantry. In addition to the hundred and fifty generals of World War II who were students and another

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19 Renamed the Army School of Line in 1907.

20 Nenninger, op. cit., p. 175. Pogue, Forrest C., *Education of a General 1880-1939*, op. cit., pp. 93-108. Marshall, G.C., *George C. Marshall Interviews and Reminiscences for Forrest C. Pogue: Transcript and Notes, 1956-1957*, eds., Bland, L.I., Bland, J.K., and Stevens, S.R., Lexington, VA: George C. Marshall Research Foundation, 1991, p. 211.

21 Ibid., pp. 250-251. *The Soldierly Spirit, 1880-1939*, Vol. 1, The Papers of George Catlett Marshall. ed., Bland, L.I., asst. ed., Ritenour, S.R., Baltimore and London: The Johns Hopkins University Press, 1981, p. 415.

22 Pogue, F.C., *Education of a General*, op. cit., pp. 248-249.

fifty who were instructors in this five year period, hundreds of future field grade officers also felt the impress of Marshall's Benning when they were learning the basis of their trade.

Marshall sought and achieved at the Infantry School, in his own words, "an almost complete revamping of the instruction and technique." But his experiences there led him to entertain profound misgivings that other Army schools, especially Leavenworth, improperly prepared officers for battlefield leadership.

Marshall saw little of Leavenworth's graduates after he left Benning that he found reassuring. In May of 1938, just before he was posted to the War Department and to his destiny, he was in command of a brigade of the Third Division and the Civilian Conservation Corps District headquartered at Vancouver Barracks, Washington. That month Marshall exchanged letters with his old friend, Brigadier General John McAuley Palmer. Palmer, long an advocate of better education for general staff officers, had written to express concern that there appeared to be a move afoot at Leavenworth to have the Army impose some form of academic eligibility on command as well as on general staff assignments:[23]

> A good General Staff officer is primarily a product of education, whether he gets his training in a staff school or by self-application. The gift of command is not. All history proves this. . . . Steuben's General Staff training made him Washington's indispensable assistant. But he lacked the rugged moral qualities that made Washington a great commander in spite of his limited military education. Steuben was largely the product of education. Washington was not.

Marshall's reply bespoke his own misgivings about Leavenworth in 1938, and his deep conviction that preparedness for war required more practical exercises afield:[24]

> The years pass and conditions change. Leavenworth, its associations and what it gave me, remain a most cherished memory, backed by a continued feeling of gratitude; but, strange to say, I am almost regarded today as an opponent to Leavenworth. I am so fed up on paper, impressive technique and the dangerous effect of masses of theory which have not been leavened by frequent troop experiences such as we had in the old days, and particularly in the summer maneuver camps. I have a feeling now that Leavenworth could be vastly improved, and the army saved the possibilities of bitter confusion and recriminations during the opening months of warfare of movement, if the instructors every other year could be poured into actual troop conditions for three weeks of maneuvers at Benning with that garrison of 7000, the cavalry from Ogelthorpe, the 8th Brigade from the coast and

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23 *The Soldierly Spirit*, op. cit., pp. 599-600.

24 Ibid.

> McClellan, artillery from Bragg, and the mechanized forces from Knox. I believe this concentration could be made for $10,000, and I believe it would do, after several years, a hundred million dollars of good towards National defense. . . .

B. THE FORMATION OF A MILITARY PRAGMATIST

1. The Importance of Application

From his days as a student and instructor at Leavenworth, George Marshall had been impressed with the utility of interspersing theoretical instruction with exercises in the field with troop units. His Leavenworth summers were spent as an instructor with the National Guard, learning, among many other valuable lessons, how to teach tactics to citizen-soldiers, and how to plan and direct field exercises. Marshall proved to be an effective instructor: one of the officers of the Pennsylvania National Guard described him as directing men by showing them the way to go, saying that "he had the ability to make everybody understand."[25] But those were not easy summers for Marshall; typically, he worked intensely, with limited time and terrain, and dealt with trainees difficult to handle, at best. But he was able to exercise effective command over sizeable bodies of troops in the field--certainly more than could a lieutenant in any other circumstance--and to experiment with methods of control. In 1939 he described those first reserve training experiences as learning "a tremendous amount about how to do a great deal in a short time."[26]

> Troops were arriving one day and going into maneuvers the next. We were running eight to ten maneuvers on the road. I shall never forget the lesson I learned from human reactions and from what it takes to make attacks, apart from maps.

Marshall also found that the Army's schools at Leavenworth stretched him, junior and unprepared as he was: "It was the hardest work I ever did in my life."[27] Teaching methods in the Department of Military Art at Leavenworth then emphasized "application." Major John F. Morrison, the senior instructor of tactics, exerted a powerful influence on Marshall. Morrison, an unprepossessing, asocial officer, required his students to demonstrate their tactical skill in two-sided, board-based battle simulations (or war games), on terrain rides (tactical exercises without troops), on staff rides (staff role-playing in

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25 Ibid., p. 102

26 Ibid., p. 103.

27 Ibid., p. 96.

tactical exercises without troops), and in field exercises with troops in which students commanded troop elements, and instructors graded their performance. The thrust of Morrison's teaching was practicality, celerity, and directness: as Marshall put it, Morrison talked a totally different language from his fellow instructors: "The others were talking about technique and calling it tactics . . . he talked about the simplicities of tactics and cared (or maybe knew) nothing of technique." Where other instructors shaved grade points over minutiae, Morrison hacked chunks from a student's grade for his failure to perceive and apply the tactical principle involved for accomplishing mission in a given circumstance. Morrison stressed that adroit maneuver could nullify indirect fires, provided the maneuver elements were trained well enough to maintain extended combat formations and to move rapidly.[28] As Marshall remembered Morrison's teaching:[29]

> Theretofore we could recite the principle, but rarely recognized it in action. His problems were short, and always contained a knockout if you failed to recognize the principle involved in meeting the situation. Simplicity and dispersion became fixed quantities in my mind, never to be forgotten, and their application realized to almost any situation, from garrison police to an army battle. He spoke a tactical language I have never heard from any other officer. He was self-educated, reading constantly and creating and solving problems for himself. He taught me all I will ever know of tactics.

When Marshall completed his assignments at Leavenworth, he took 4 months of accrued leave, and traveled to Europe with his wife, a leisurely tour free of professional pursuits except for his accompanying the British Army on their annual maneuvers at Aldershot. On his return, someone in the War Department remembered him as an officer with experience in staging maneuvers, and sent him to Texas to help set up a large maneuver scheduled to be held that spring [1911] near San Antonio, the first concentration of an American division in the 20th Century. Marshall, attached to the supporting Signal Corps unit, promptly devised a plan to conduct warm-up exercises for commanders and staffs only, in which orders were transmitted by radio and telephone messages, and the developing tactical situation portrayed through responding reports and other replies--a precursor of what was later known as a Command Post Exercise. The San Antonio maneuver itself proved to be an admixture of new technology and administrative shortfall: when troops were deployed, they were successfully supported by Signal Corps telephones and radios, and by Signal Corps aircraft, but the maneuver also revealed serious weakness

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28 Millett, A.R. "Cantigny, 28-31 May 1918," In *America's First Battles 1776-1965*, ed., Heller, C.E., and Stofft, W.A., Lawrence, KS: University Press of Kansas, 1986, p. 152.

29 *The Soldierly Spirit*, op. cit., p. 45.

in War Department methods for concentrating large bodies of troops, and ultimately led to important reforms.

Marshall's next assignment was as Inspector-Instructor, Massachusetts Volunteer Militia, where he helped plan and conduct in the summer of 1911 a maneuver for 6,000 militiamen, and in the summer of 1912, a successful exercise for 2,300 regulars and 15,000 National Guardsmen from six northeastern states. Brigadier General Tasker Bliss, who was in command of the latter, lauded Marshall for his skill in setting up the "various situations of the campaign."

2. The Philippines

Ten years into his Army career, Marshall was still a lieutenant, and there lay immediately ahead assignments in which his evident tactical talent could not be well exercised. During one such, he wagered that a certain inspecting officer would unerringly detect three minor discrepancies in his unit, but miss three major tactical errors in its field exercise, all six flaws to be staged by Marshall. Marshall won his bet: the inspector reported an unshaved soldier, a blouse unbuttoned, and a missing bayonet, but made no comment on three egregious tactical missteps.[30]

But one assignment proved pivotal: Lieutenant Marshall was in the Philippines, detailed to act as adjutant for the "White Force," a maneuver "enemy" force of 4,800 troops scheduled to "invade" Luzon in January 1914. The colonel commanding the force was an amiable drunk on the verge of retirement, his chief of staff fell ill, and so the direction of the 5,000 "invaders" devolved upon his adjutant. Marshall executed the mission with aplomb. Lt. Henry H. (Hap) Arnold, who was there, wrote of seeing Marshall lying in a bamboo clump, glancing at a map, and dictating field orders for an advance which disorganized the 3,200 "Brown Force" defenders, and drove relentlessly toward Manila. Arnold wrote his wife that he had just seen a future Chief of Staff in action. When the maneuvers concluded, the chief umpire singled Marshall out for praise in his official report.[31] In 1939 Major General Johnson Hagood published an article in the *Saturday Evening Post* claiming that Major General J. Franklin Bell, then commanding the Philippine Department, thereupon proclaimed Marshall the greatest military genius since Stonewall Jackson, a statement Bell almost certainly never made. What is certain is that

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30 Pogue, F.C., *Education of a General*, op. cit., pp. 120-121.

31 Ibid., pp. 122-123.

Marshall came favorably to General Bell's attention, and Bell became one of those senior officers who thereafter guided his career upward (Figs. I-2, I-3).

Bell granted Marshall 2 months sick leave, and Marshall appended to it 2 months regular leave, during which time he and his wife toured Japan, Manchuria, and Korea. Marshall spent part of one month riding over the Manchurian battlefields of the Russo-Japanese War he had studied at Leavenworth, discussing with Japanese participants their training methods, and observing their training exercises. Marshall "came away with a new idea of those fights and entirely different ideas as to the proper methods to follow in peacetime training."[32] For example, he admired Japanese training in the use of the bayonet and the hand grenade, noting that there was probably not a private soldier on Corregidor who had ever heard of a hand grenade. He was also struck by the value the Japanese attached to night attack, using techniques and tactics unfamiliar to Americans.

In March 1915, Brigadier General Hunter Liggett arrived in the Philippines to command the Infantry Brigade there, and knowing Marshall from Leavenworth, had him assigned as his aide-de-camp. Later that year, he directed Marshall to plan a terrain ride for the brigade's officers up the central valley of Luzon to the Lingayen Gulf to assess prospects for a successful defense in the event the Japanese were to land from the Gulf. The 2-week ride, conducted in January 1916, led Liggett to entertain doubts over the feasibility of defense, but to repose high confidence in the professionalism of his aide-de-camp. Two years later, when Liggett was commanding First Army in France, he appointed Marshall his principal staff officer for plans and operations.

When Marshall returned from the Philippines to the United States in the summer of 1916, Major General Bell, then commanding the Western Department, took the newly promoted Captain Marshall as his aide-de-camp, and promptly put him to work on field training for civilian volunteers first at at Monterey, CA, under command of Brigadier General William L. Sibert, and later at Fort Douglas, UT, under command of Lieutenant Colonel Johnson Hagood (author of the "Stonewall Jackson" apocrypha).[33] In the spring of 1917, immediately after America's declaration of war, Bell was made commander of the Eastern Department at Governor's Island, NY, and dispatched Marshall to Plattsburg,

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32 Ibid., pp. 124-125.

33 Lt.Col. Hagood, in filling out Marshall's efficiency report, had to respond to the form question whether he would be willing to have Marshall again under his command. Hagood's entry is probably unique in Army records: "Yes, but I would prefer to serve *under his command.*" Ibid., p. 138.



Figure I-2. Captain Marshall and Major General J. Franklin Bell, Spring 1917



Figure I-3. Colonel Marshall in France, 1919

NY, to help organize training for 2,500 newly mobilized reserve officers. Bell fell sick, and Marshall then acted as his executive officer, reporting daily to Bell in the hospital on a tumultuous skein of personnel and logistic problems that, by and large, Marshall deftly handled.

3. American Expeditionary Force

When General Pershing, commander of the AEF, came through New York on his way to France, Captain Marshall asked to accompany him. Pershing was unwilling to detach Marshall from Bell in the latter's time of need. In Washington, however, General Tasker Bliss, then in the War Department, who knew Marshall from the New England maneuvers, and Major General Sibert, who remembered Marshall from Monterey, jointly decided that Captain Marshall should go to France with the 1st Division, which Sibert was then organizing. Sibert telegraphed Bell requesting Marshall's release, and Bell acceded, noting that Marshall was "especially well qualified to perform the duty of chief of staff for corps or army or to command same."

In June 1917, Captain Marshall sailed for France, sharing a cabin with a major of artillery, a West Pointer named Lesley J. McNair. In France, both were assigned to the General Staff, and detailed to the 1st Division G-3 (Operations, Training, Plans). Marshall was soon Sibert's primary staff assistant, in that the division was preoccupied with elementary individual training and basic weaponry. Formed around four of the regular infantry regiments with the oldest and most honored lineage, the 1st Division was in fact composed mostly of men who had entered the Army since April 1917: two out of three soldiers, six out of ten NCOs, five out of ten company commanders had no pre-war military experience. General Pershing was determined to move divisions to France as fast as raw manpower could be assembled and put into uniform in the United States, and to establish in France a training base capable of providing both institutional and unit training to ready the units for combat. He was further adamant that, despite the urging of the Allies, American divisions would be trained together under American command, and would be, when committed, employed under American command as part of an American national force. Finally, he was convinced that the American forces should be trained not only for combat among the trenches, but also for "open warfare," a campaign of maneuver that Pershing believed would begin when the Germans were driven from their field fortifications.

The 1st Division was a long way from readiness for any form of warfare, having neither a full complement of weapons, nor doctrine on how to fight. On the ship en route to France, the officers had among them only a single copy of a booklet on trench warfare borrowed from a British officer. Marshall never forgot the difficulty of fashioning an effective fighting force from such raw material. Units had to start with close order drill and other training aimed at inculcating discipline, bearing, and care for uniform and equipment among rank and file. Not until the end of August did the division begin tactical exercises under the tutelage of the French 47th Division, *Chasseurs Alpins*, a crack unit known as "Blue Devils." In October 1917, units of the 1st Division were deemed ready enough to rotate, under French command, through quiet sectors on the front, and in early November, the division sustained its first infantry fatalities. Marshall, supervising the rotations to the front, began to see war at first hand. He was promoted to temporary major in August 1917, and to lieutenant colonel in January 1918, his work as a trainer earning for him a growing reputation in the AEF, and the confidence of General Pershing himself. In December, Major General Sibert was replaced by Brigadier General Robert Lee Bullard, but the new commander retained Marshall as his G-3. Shortly after the turn of the year, the 1st Division in its entirety took over a defensive sector on its own, and thereafter moved as a whole in and out of the line.

Marshall tasted oversupervision from the AEF. The 1st Division, further along in its training than any of the other divisions, was General Pershing's main hope for proving that he was right in insisting that American units should be used under American command, not parceled out as reinforcements for the more experienced British and French armies. Even the 1st Division's small patrols and raids came under AEF scrutiny, and on one occasion, so intense was the interest from above, Marshall felt impelled to write a four-page order for Bullard's signature, and to supplement that with detailed written instructions for the leaders of the raiding parties.

In March, Marshall's tactical acumen influenced an action at Seicheprey, a strongpoint occupied by the 18th Infantry Regiment of the 1st Division. Marshall, personally observing German artillery registering around Seicheprey, and reinforced by intelligence estimates that a raid on Seicheprey was in the offing, recommended to Bullard that the 18th's rifle companies be withdrawn rearward to entrenched counterattack positions, leaving the front line to be held by automatic riflemen and artillery forward observers. Bullard had misgivings about troop morale suffering from this "retirement," but eventually agreed. The Germans did attack, first with gas, then with a strong raid. The

18th avoided the chemical attack, and demolished the raiders. It was a small action, but the French thought it promising: Premier Clemenceau himself came down to award the *Croix de Guerre* and to express the gratitude of France.

In April 1918, following a rear-area, full-division exercise in the "open warfare" at which Pershing was aiming the AEF, the 1st Division marched to Picardy to defend a sector of the French First Army weakened by German assaults. Bullard was sick,[34] and Marshall took on much of the task of overseeing combat operations. In late May 1918, the division was directed to undertake the first offensive action by American forces, an attack to eliminate a salient by seizing the German-occupied town of Cantigny and its crossroads, atop a low ridge some 300 meters forward of the division's outposts. Bullard allowed Lt. Col. Marshall and the commander of the division's artillery, Brigadier General Charles P. Summerall, to plan the attack.[35] Together they arrived at a concept for the operation which relied on surprise, heavy firepower, and swift maneuver. But simplicity was scarcely evident: their voluminous written orders sought to eliminate chance, to prescribe for all contingencies. Cantigny was to be a limited objective attack, an elaborately prepared, even rehearsed, mechanistic set-piece, the antithesis of "open warfare." On the morning of 28 May 1918, the 28th Infantry Regiment, supported by a company of the 18th Infantry and by 1st Battalion, 26th Infantry, after a devastatingly effective artillery and machine gun preparation, stormed eastward through Cantigny behind a rolling barrage. Advancing on a front of nine companies, the 28th soon occupied its objectives beyond the town, but left its flanks and rear precariously insecure. Fighting within Cantigny continued for several days. The regiment held its forward positions for 3 days despite punishing German bombardment and infantry counterattacks, and effectively eliminated two German regiments in the battle. The 28th was relieved by the 16th Infantry, and the 1st Division consolidated its gains.

It was a costly victory--the 28th lost half its officers, and a third of its enlisted men--but a victory it was, and it sent new expectations throughout the allied forces, for the

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34 Bullard suffered from neuritis, but kept himself officially healthy by using a personal physician, an infantry officer, assigned as an aide de camp. Millett, A.R., *The General: Robert L. Bullard and Officership in the United States Army 1881-1925*, Contributions in Military History, No. 10, Westport, CT: Greenwood Press, 1975, p. 334.

35 Three future Chiefs of Staff of the U.S. Army then served in the 1st Division: Colonel John Hines of the 16th Infantry (CSA 1924-26), Brigadier General C.P. Summerall of its Artillery Brigade (CSA 1926-30), and Lt. Col. Marshall (CSA 1939-45). T.N. Dupuy, the historian, credits Summerall with the system of fire control that enabled the American artillery of World War II to dominate the battlefield (interview 7/17/91).

AEF had at last proven that it could seize and hold ground. General Pershing pronounced that his forces were now ready for offensive action, cabling the War Department that: "The affair at Cantigny on the twenty-eighth was well planned and splendidly executed. Our staff work was excellent. . . . The Allies are in high praise of our troops."[36]

In June, Marshall applied for a combat command, but Bullard, in forwarding his request, stated that he was far too valuable in staff work: "I doubt that in this, whether it be in teaching or in practice, he has an equal in the Army today."[37] In July, Bullard did recommend Marshall for regimental command,[38] but by that time Marshall had been selected for Pershing's staff, and ordered to duty with the Operations Section of the General Headquarters of the AEF. In August, he was detached to become G-3 of the newly formed First Army (General Hunter Liggett commanding), missioned to attack the German salient at St. Mihiel. Marshall was promoted to colonel in late August 1918, and as G-3, planned and coordinated the great Meuse-Argonne offensive. Marshall was then thoroughly caught up in the production and amendment of extensive written plans and orders, so much so that an amused French colonel noted to him that First Army was conducting "*une guerre des papiers.*"[39] Even so, Marshall's planning bore fruit, and in October and early November Pershing and the AEF at last broke out of the trench lines into "open warfare." A correspondent described the scene in First Army's operations center as its attacks gained momentum:[40]

> Staff officers . . . almost capered before the wall map as the thumbtacks and red string went forward to places that had seemed once as far away as Berlin. The drawn, sleepless face of Colonel George C. Marshall, chief of operations, lighted up as he went over with us the colored pencil lines on his own map and talked with happy sureness of where we would be next day.

Immediately after the Armistice, Marshall served briefly as Chief of Staff, VIII Corps. Anticipating the VIII Corps assignment, Pershing had put his name on the list for promotion to brigadier general in mid-October 1918, but Congress delayed acting, and temporary promotions ended with the Armistice. Many of Marshall's

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36 Pogue, *Education of a General*, op. cit., pp. 164-168. Millett, *Cantigny, 28-31 May 1918*, op. cit., pp. 172-179.

37 Pogue, *Education of a General*, op. cit., p. 168.

38 Millett, A.R., *The General*, op. cit., p. 370.

39 Pogue, *Education of a General*, op. cit., p. 184.

40 Ibid., pp. 184-185.

Leavenworth contemporaries were luckier than he in winning promotion to flag rank. Major Lesley J. McNair, with whom he had journeyed to France, had won three promotions, becoming a brigadier general at age 35, the youngest general officer of the AEF. But none of Pershing's officers earned a more solid professional reputation than Marshall. As G-3 of the Big Red One, Marshall had a chance to apply his career-long experience with training and directing line units; as Liggett's G-3 in First Army, he planned and supervised the battle movements of more American troops than would any other American general staff officer until General Omar Bradley's 12th Army Group operated in France in 1944.

4. Pershing's Aide

From his empery at field army and corps, Marshall descended fairly precipitously. Dispatched to lecture about the conduct of the war to troop units awaiting return to the United States, Marshall encountered AEF officers of a type with whom he had had to deal only infrequently: "class B officers" of the rear echelons, bureaucrats and martinets, often line officers restationed rearward for failure--as the AEF put it, "sent to Blooey" [Blois]. Marshall found particularly exasperating those officers who ordered rigid, arduous training exercises primarily to keep soldiers busy, a practice he deemed an abuse of training. Perhaps because of such obtuseness, he accepted an offer from General Pershing to become one of his aides-de-camp, and served in the capacity of the General's personal chief of staff for 5 years, 1919-1924. (Marshall later regretted those years away from troops, and during his years as a general, seldom had an officer detailed as aide.) There can be little doubt that Marshall's years with Pershing were a vital part of his education for his World War II responsibilities: he learned much about the politics of the Army, and something about national politics, a useful preparation for a future Chief of Staff of the Army. But there was little time for the troop training at which he excelled.[41]

5. The 15th Infantry in Tientsin

Marshall returned to the line in the rank of lieutenant colonel, assigned as the Executive Officer of a two-battalion infantry regiment stationed between the capital of China and the sea as part of what today might be termed an international peace-keeping force, each country's contingent missioned to protect its compatriots and their property,

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41 Ibid., pp. 193-197.

and to keep lines of communications open amid civil war among the *tuchun* (warlords). It was a curiously modern assignment: compared with the armed hordes moving about the countryside, the 15th Infantry was militarily impotent, but successfully performed its mission through bluff and persuasion.

Marshall recorded his impressions of the 15th Infantry, after observing it for 5 months, in these terms:[42]

> I find the officers are highly developed in the tactical handling or functioning of weapons, in target practice, in bayonet combat, and in special and intricate details of paper work or administration generally, but when it comes to simple tactical problems, the actual duties of troop leading, they all fall far below the standards they set in other matters.

Marshall set out to raise standards through tactical exercises. He also took personal interest in the 15th's weapons ranges 175 miles from Tientsin, refitting the encampment so that it supported both training and recreation. A young language officer from Peking visited the camp in 1925, and reported dismay at watching Marshall, whom he knew to have been one of the Army's giants in France, engaged there in teaching squad tactics:[43]

> It seemed to be a great comedown., and I began to wonder what the Army held for me [when] almost ten years after a great war . . . one of its large figures was busily engaged in teaching little groups of eight men how to handle themselves on the field. Secondly, I was a little surprised that he didn't feel that sort of thing beneath him. . . . It was a considerable time afterwards that I realized that that was really the essence of George Marshall, that basically when he thinks there is something that should be done . . . he follows it right down . . . . [T]his is a strength and not a weakness . . . .

C. THE ESSENTIAL MARSHALL

George Catlett Marshall was sworn in as Chief of Staff of the Army in his thirty-eighth year of commissioned service. He had spent nearly 15 years as a company grade officer. Although his branch was infantry, he had never commanded troops in combat and, indeed, had spent less than a quarter of his service leading troops (including elements of the Civilian Conservation Corps). The remainder of his assignments had been divided almost equally between staffs and training, that is, training in Army schools as a student or on the faculty, or training reservists. He had more service as an aide-de-camp than as an infantry

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42 Ibid., p. 250.

43 Ibid., p. 241.

unit officer. Although he had won renown as a General Staff officer, he had worn the General Staff insignia less than three years. Yet in retrospect, President Roosevelt could have picked from among likely candidates no better man for the job. It is, of course, germane that Roosevelt had known Marshall personally from the days when he had visited Fort Benning from Warm Springs, and that General Pershing strongly commended him to the President over others. But Roosevelt's choice was a soldier thoroughly grounded in his profession, a master tactician, an outstanding trainer. The years of World War II would prove him also a strategic leader of vigor, compassion, acumen, and extraordinary foresight. Marshall was, to use Winston Churchill's accolade, the organizer of victory. Whence came his competence?

Marshall left few writings aside from personal and official correspondence.[44] There are, however, two documents from the 1930's that seem fairly to summarize his concepts of officer development: a letter to Major General Stuart Heintzelman, Commandant at Leavenworth, dated in December 1933; and *Infantry in Battle*, a book prepared under his direction at Fort Benning, first published in May 1934.[45]

1. The Heintzelman Letter

After Marshall left Benning, he spent over a year with the Civilian Conservation Corps. In 1933, the War Department was unable to meet its payrolls, and the Army had been reduced to the point that the United States ranked eighteenth among the world's nations in active forces and trained reserves--only Honduras, Haiti, and Venezuela had a smaller proportion of their population in military training.[46] In October 1933, Marshall was promoted to Colonel, and appointed senior instructor, Illinois National Guard. In December he wrote to Heintzelman at Leavenworth, an old friend, reporting that, after three

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44 Years after his death, his stepdaughter published a manuscript that his wife recalled the General wanted destroyed: Marshall, G.C., *Memoirs of My Services in the World War 1917-1918*, Boston: Houghton Mifflin, 1976, p. viii. In a 1921 *Infantry Journal* article, Marshall warned against generalizing on the U.S. Army's 1918 experience of fighting against an exhausted foe. Marshal, G.C., "Profiting by War Experiences," *Infantry Journal*, 18, January 1921, pp. 34-37.

45 Harding, E.F., Tindall, R.G., Andrews, J.A., and Lanham, C.T., eds., "Infantry in Battle," 1934, *The Infantry Journal*, Washington, DC, p. 1. The more familiar edition is Harding, E.F., and Lanham, Charles T., eds., "Infantry in Battle," Third Edition, 1939, *The Infantry Journal*, Washington, DC.

46 *Military Policy of the United States 1775-1944*, op. cit., p. 24.

abortive drafts, he felt at last able "to let go and tell you, very confidentially I hope, what I have long wanted to say to you personally":[47]

> Briefly, my experience at Benning, especially my observation of two Corps Area maneuvers (about 7,000 troops) most of which I was charged with staging, has led me, not to the opinion, but to the firm conviction that our teaching and system has to be materially modified if we are to avoid a chaotic state of affairs in the first few months of a campaign with a major power. I think we have the best school system in the world, but I also think we are suffering acutely from a lack of practical experience in anything approximating warfare of movement at the outset of a campaign, with inexperienced officers and hastily recruited-up-to-war-strength organizations . . . warfare of movement . . . does not admit of orders one half or even one fourth as long as those turned out in our schools. . . . (We learnt that the modern German divisions are sometimes deployed on oral orders) . . . the lack of troops, the infrequency of prolonged maneuvers, the tremendous number of desk jobs or non-command jobs now prevalent in the Regular Army, and the frequency of pure command post training, has led us into theoretical misconceptions that do not hold water in the the actual business of handling large bodies of troops in protracted maneuvers.
>
> I will briefly cite . . . a few of my experiences at Benning . . . which led me to an almost complete revamping of the instruction and technique at that school. All this I had to do quietly and gradually, because I felt so much opposition would be met on the outside that I would be thwarted. . . . [W]e bored from within without cessation during my five years at Benning.
>
> I found it next to impossible to convince instructors long absent from troops and steeped in school technique, of the urgent necessity for simplifying matters, no matter how great their war experience, and no matter how loyal they were. They had become unconscious creatures of technique, and lived in the experiences of the fourth year of a war. I made very little progress with these fellows until I stopped all rehearsed demonstrations of tactics, and introduced a number of free maneuvers into the course and, finally, placed instructors in command in maneuvers, with all the Corps area troops, and let them commit errors, some so gross as to be almost amusing, in their blind following of technique. . . .
>
> I found that the technique and practices developed at Benning and Leavenworth would practically halt the development of an open warfare situation, apparently requiring an armistice or some understanding with a complacent enemy.
>
> It was evident in many things that the real problem, the real difficulty, usually was not comprehended until too late. For instance . . . all knew how to set up a command post but few understood the real problem, how to avoid a complete set up until the proper moment had arrived. The

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47 *The Soldierly Spirit*, op. cit., pp. 409-413.

momentum of an operation was usually killed by the premature setting up of complete command posts. Or, prolonged thought would be given to reaching a tactical decision on purely tactical grounds, when the difficulties of execution or some entirely non-tactical matter, were the real dominant factors.

I found that the ordinary form of our tactical problem committed two deadly sins, relieving the student from the greatest difficulties of his tactical task in warfare of movement. The information of the enemy was about 80% too complete. And, the requirement called for his decision at a pictured moment, when the problem is usually, *when* to make a decision and not, *what* the decision should be. . . .

In the Corps Area maneuvers the mistakes were so numerous, and often so gross, that a critique was extremely difficult to handle with tact. Staff officers of brilliant reputation in the Army, graduates of Leavenworth and the War College, former instructors at those schools, committed errors so remarkable that it plainly indicated that our school system had failed to make clear the real difficulties to be anticipated and surmounted in a war of movement. The individual sank in a sea of paper, maps, tables, and elaborate technique. Or, if he attempted to shorten the working method he confused everything because of lack of training in the more difficult--the simpler methods. . . .

I insist we must get down to the the essentials, make clear the real difficulties, and expunge the bunk, complications, and ponderosities; we must concentrate on registering in men's minds certain vital considerations, instead of a mass of less important details. We must develop a technique and method so simple and so brief that the citizen soldier of good common sense can readily grasp the idea...

At first I found my Instructors did not even want to go to the Corps Area maneuvers at Camp Jackson. . . . They preferred the even tenor of their theoretical ways. But I must say now, that I think the faculty at Benning the last three years I was there was composed of the most brilliant, interesting and thoroughly competent collection of men I have ever been associated with. We all learned together, but we had a devil of a time getting started. We never got to the point of teaching tactics as General Morrison taught it--most of our supposed tactical instruction fell into the domain of technique.

It appears to me that Leavenworth should specialize on the tactics and technique specifically adapted to--

- Partially trained troops;
- Partially trained officers;
- Mixed strength of organizations and lack of special troops; and
- The first six months of a major war. . . .

In 1937, Marshall wrote to the Deputy Chief of Staff of the Army that his observations of Leavenworth graduates serving as instructors for the National Guard and Reserves, or participating in command post exercises and maneuvers, had convinced him that the foregoing advice was more valid than ever. He cautioned against trying to change

the school by edict, urging instead the method he had used at Benning: a careful, subtle internal reform, a slow reshaping of faculty minds. Again he stressed that Leavenworth's concentration on "ponderous technique and formal tactics," on *what* decision to make, should give way to training on *when* to make decisions, and to learning how to cope with the situations of battle, for what *is*, unencumbered with concerns for what *ought to be*.[48]

In 1957, at age 77, Marshall's harsh judgements against Leavenworth's fixation with theory and staff process, as opposed to applicatory exercises in the field, had mellowed. Asked in a taped interview to reflect on Leavenworth's contribution to the Army, he responded:[49]

> . . . I was very much worried at the start of the Second World War for fear our officers . . . were too theoretical. We didn't have an actual fleet in the water like the navy did; we had no real army . . . the officers had to get their training theoretically, and I was very much afraid that it was going to be too much theory. But afterwards I discovered that our men were so well prepared in the theoretical part--the large factors of the thing--that they were far yonder, I thought, ahead of the preparations of that nature than the British. The British had an immense advantage in tactical information because of their battle experiences, particularly in the early part of the Second World War, but when it came to the other aspects of it, it was quite the other way around. . . .

The Skelton Panel's final report acknowledged that its witnesses had cited three principal characteristics of a strategist: talent, experience, and education. Native intelligence, imagination, and skill in self-expression is fundamental. But:[50]

> Talent alone is insufficient: it must be reinforced by both appropriate experience and relevant education. . . . both assignments and schooling help to build on the natural abilities of potential strategists. The development of a strategist such as George C. Marshall was . . . the result of Marshall's being taught to think broadly and . . . taking the time to read extensively and reflect on that reading. . . . [But] future strategists need firsthand experience in how the real world works. . . .

What George Marshall thought about most of his career was how to provide a substitute for combat experience to officers in peacetime training (Figs. I-4, I-5). Much of his time was dedicated to portraying battle to the uninitiate, showing through "problems,"

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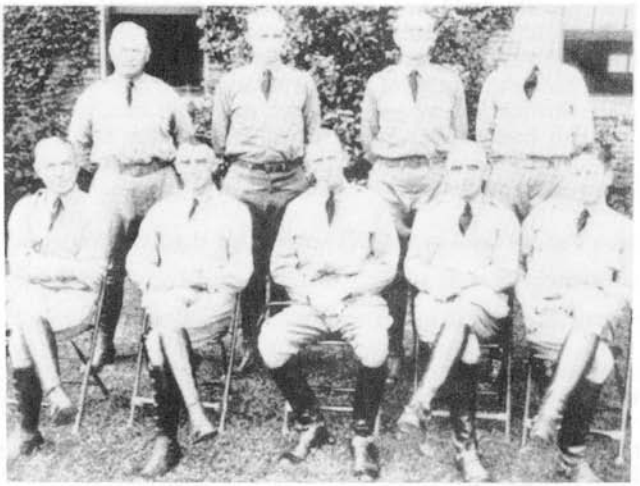
48 Ibid., pp. 531-533.

49 Marshall, George Catlett, *George C. Marshall Interviews and Reminiscences for Forrest C. Pogue: Transcript and Notes, 1956-1957*, Lexington, VA: George C. Marshall Research Foundation, 1986, p. 139.

50 *Report of the Panel on Military Education of the One Hundreth Congress*, Committee on Armed Services, H.o.R., One Hundred First Congress, First Session, April 21, 1989, U.S. GPO, pp. 28-29.

"situations," and "maneuvers," how the real world of war works. He learned to distrust the eagerness of some veterans of World War I to extrapolate from a few hours experience hard and fast rules for deportment in combat. Marshall taught at the Infantry School that:[51]

> The leader who would become a competent tactician must first close his mind to the alluring formulae that well-meaning people offer in the name of victory. To master his difficult art he must learn to cut to the heart of a situation, recognize its decisive elements and base his course of action on these. The ability to do this is not God-given, nor can it be acquired overnight; it is a process of years. He must realize that training in solving problems of all types, long practice in making clear unequivocal decisions, the habit of concentrating on the question at hand, and elasticity of mind, are indispensable requisites for the successful practice of the art of war.



Front row, left to right: Lt. Col. Morrison C. Stayer, Lt. Col. Joseph W. Stilwell, Lt. Col. Marshall, Major William F. Freehof, Major Edwin F. Harding.
Back row: Captain Howard L. Liston, Major Omar N. Bradley, Major Emil W. Leard, 1st Lt. Fremont B. Hodson

Figure I-4. Lt. Col. Marshall, Assistant Commandant, With Faculty and Staff of the Infantry School, 1930-1931

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51 The passage is from the foreword to *Infantry in Battle*, op. cit., p. 1.



Figure I-5. Lt. Col. Marshall, The Assistant Commandant

2. Infantry in Battle

Convinced that most decisions in battle must be taken swiftly, on scanty information, Marshall believed that realistic military training ought to emphasize dealing with the unexpected, and practicing the art of improvisation. He wanted tactical instruction to elicit understanding of what situational elements dominated battle outcomes, so that learners could recognize essentials. Among these, he was sure, were time, terrain, and the temperament of the American soldier. At the Infantry School, he sought to imbue faculty and students alike with a profound respect for common sense, and insisted that the only orders worth giving were those that could be prepared and delivered quickly, and that could be readily understood by nonprofessionals. One of his first acts as Assistant Commandant

was to announce that more would be expected of students: more self-study of map reading and land navigation; more physical training; more tactical training, during which more instruction would be conducted out of doors, in the countryside around the cantonment--indeed, students would be expected to provide their own transportation to some of the remote training sites. While it took some years to effect change, the reports and correspondence of the Infantry School during his tenure reflect a marked increase in field firing, night operations, tactical walks, and maneuvers in which students commanded troops [e.g., in April 1931, students commanded throughout a two-sided, free-play, brigade-level maneuver directed by the Academic Department]. Added to the curriculum were such innovations as hand grenade qualification, training methods of foreign powers, tank driving, 1,000-inch machine gun ranges, mechanized operations, use of field radios, and employment of air.[52]

But *Infantry in Battle* is his written legacy, a book that still stands as a classic on tactics. Although it was published in 1934 after Marshall left Fort Benning, some of its chapters had been published while he was Assistant Commandant in *The Mailing List,*[53] the School's professional periodical "prepared by the Academic Department of the Infantry School under the supervision of the Assistant Commandant." In a foreword for *Infantry in Battle*, the Chief of Infantry noted that the book had been prepared under the direction of Colonel Marshall. Its tenor is certainly consistent with Marshall's teachings: neither he nor the book was concerned with theories of strategy, but rather with the practicalities of command of troops in combat. Marshall did write a brief introduction for *Infantry in Battle*, noting that the book was designed for the "peace-trained" officer:

> There is much evidence to show that officers who have received the best peacetime training available find themselves surprised and confused by the difference between conditions as pictured in map problems and those they encounter in campaign. This is largely because our peacetime training in tactics tends to become increasingly theoretical. In our schools we generally assume that organizations are well-trained and full strength, that subordinates are competent, that supply arrangements function, that communications work, that orders are carried out. In war many or all of these conditions may be absent. The veteran knows that this is normal and

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52 Copy of undated MS in the possession of the author, attributed to Captain Galt Proegler, which appears to be a student research paper written no earlier than 1972, drawing, inter alia, upon official USAIS correspondence and reports 1927-1931.

53 Cf. "Infantry in Battle," *Mailing List 1932-1933*, Vol. V. Fort Benning, GA: The Book Shop, The Infantry School, 1933, pp. 5-9. In the Marshall Library (Lexington, VA) there is a copy of *Mailing List*, Volumes V and VI, with the name "Colonel George C. Marshall" engraved on the front cover, and with Marshall's signature in ink on the flyleaf.

> his mental processes are not paralyzed by it. He knows that he must carry on in spite of seemingly insurmountable difficulties and regardless of the fact that the tools with which he has to work may be imperfect and worn. Moreover, he knows how to go about it. This volume is designed to give the peace-trained officer something of the viewpoint of a veteran.
>
> By the use of numerous historical examples, the reader is acquainted with the realities of war and the extremely difficult and highly disconcerting conditions under which tactical problems must be solved in the face of the enemy. . . .

The book itself consists of 27 pungent chapters, each organized around one tactical topic, illustrated by relevant situations during World War I, with accompanying maps. A chapter begins with a short commentary, presents enumerated EXAMPLES, each with a following DISCUSSION; and ends with a pithy CONCLUSION. For instance, Chapter 1 is entitled "Rules," and opens with these statements:

> The art of war has no traffic with rules, for the infinitely varied circumstances and conditions of combat never produce exactly the same situation twice. Mission, terrain, weather, dispositions, armament, morale, supply, and comparative strength are variables whose mutations always combine to form a new tactical pattern. Thus, in battle, each situation is unique and must be solved on its own merits.

Four EXAMPLES are presented. In the first, elements of the 39th U.S. Infantry suffer heavy casualties during a textbook-perfect approach march, DISCUSSION of which opens with this punch: "Here is a perfect example of a command offered up on the bloody altar of *form*." In the second EXAMPLE, orders of the U.S. 77th Division are mistransmitted, and the 306th U.S. Infantry launches a frontal, instead of flanking, attack, leading to destructive repulse of its lead battalion; the regimental commander, acting on his own initiative, maneuvers around the enemy flank, taking the hostile position and 540 prisoners. In the third EXAMPLE, the 3rd Brigade of the U.S. 2d Division executes a wholly unorthodox night march in column on roads through a German defensive position that succeeds mainly because, as the discussion opines, "it was contrary to all the tedious rules that had been evolved while the war stagnated in the trenches. . . . No matter what the rule books say, one unassailable fact remains--the American commander's estimate of the extent of German demoralization and confusion was thoroughly upheld by the success

obtained. And we judge by results."[54] In the fourth EXAMPLE, the commander of a combat-weary 2d Battalion, U.S. 61st Infantry, ordered to seize a stiffly defended town, infiltrates under darkness a small attacking force, only a few members of which are privy to his plan, to a position on the edge of town, *inside* the German defensive artillery barrages. That U.S. commander then sends up the pyrotechnic signal calling in the German artillery. Surprised by the German shelling, his men rush pell-mell into the town, and end up securing it with few casualties. "DISCUSSION. Certainly there is nothing stereotyped about this plan. . . ."

> CONCLUSION. Every situation encountered in war is likely to be exceptional. . . . Those who seek to fight by rote . . . walk with disaster. Rather it is essential that all leaders--from subaltern to commanding general--familiarize themselves with the art of clear, logical thinking. It is more valuable to be able to analyze one battle solution correctly, recognize its decisive elements and devise a simple, workable solution for it, than to memorize all the erudition ever written of war.

The chapters present the "decisive elements" of combat. After each chapter title there is a short sub-heading, its theme in aphorism. The chapter headings and accompanying aphorisms are listed below:

Table I-1. Contents of *Infantry in Battle*

Chapter	Sub-heading
Rules	Combat situations cannot be solved by rules.
Obscurity	In war obscurity and confusion are normal. Late, exaggerated or misleading information, surprise situations, and counterorders are to be expected.
Simplicity	Simple and direct plans and methods make for foolproof performance.
Scheme of Maneuver and Main Effort	Every attack should have a scheme of maneuver. The main effort should strike the enemy's weakness.

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54 The 2d Division, then under the command of Major General John A. Lejeune, USMC, marched the 9th and 23d U.S. Infantry Regiments through the Foret de Dieulet and surprised the Germans at Beaumont. This particular incident was one that captured Marshall's attention at the time because it paralleled the action of the German Army on the very same ground in 1870. At Leavenworth, Marshall had studied the report of Phillip Sheridan, who was an observer with the German forces advancing from Bar-le-Duc toward Sedan, recording a bold move by night that caught French defenders asleep at Beaumont. Cf. Pogue, *Education of a General*, op. cit., pp. 185-186.

Table I-1. (continued)

Chapter	Sub-heading
Terrain	In the absence of definite information, infantry units must be guided by their mission and the terrain.
Time and Space	In war a large safety factor should be included in all time-and-space calculations.
Mobility	Open warfare demands elastic tactics, quick decisions, and swift maneuvers.
Surprise	Surprise is the master key of victory.
Decisions	A leader must meet battle situations with timely and unequivocal decisions.
The Plan	A unit must be engaged in accordance with a definite plan. It must not be permitted to drift aimlessly into battle.
Orders	An order must clearly express the will of the leader and must fit the situation.
Control	The test of control is the ability of the leader to obtain the desired reaction from his command.
Command and Communications	An infantry headquarters must be mobile and must keep close to the troops. From this forward position, communications must be rapid and reliable.
Supervision	Leaders must supervise the execution of their orders. The more untrained the troops, the more detailed this supervision must be.
Direction	The marching compass is the infantry officer's most reliable guide.
Fire and Movement	Fire without movement is indecisive. Exposed movement without fire is disastrous. There must be effective fire combined with skillful movement.
Fire of Machine Guns	Machine guns affect the outcome of battle by fire power alone. Guns that have not fired have not attacked, no matter how many times they have been placed in position.
Infantry-Artillery Team	The effective functioning of the infantry-artillery team depends upon the intelligent and unremitting efforts of both members to solve the difficult problem of liaison.
Nearing the Enemy	In a meeting engagement a great advantage accrues to the side which first succeeds in making effective preparation for battle.

(continued)

Table I-1. (continued)

Chapter	Sub-heading
The Advance to the Attack	The approach march should bring the troops into their assigned zone, opposite and close to their attack objective, in good physical condition and with high morale.
Soft-Spot Tactics	In an attack reserves should be used to exploit a success rather than to redeem a failure.
Battle Reconnaissance	Infantry commanders of all grades are responsible for continuous reconnaissance.
Counter-Orders	Rapid changes in a situation often require rapid changes in decisions. Therefore counter-orders will be frequent and should be accepted as normal incidents of battle.
Action and Morale	Action, physical and mental, is an efficacious antidote for battle nervousness.
Night Attacks	Success in a night attack depends largely on direction, control, and surprise.
Miracles	Resolute action by a few determined men is often decisive.
Optimism and Tenacity	Optimism and tenacity are attributes of great leadership.

Of particular interest, given Marshall's role in producing the book, is the DISCUSSION of EXAMPLE 2 in the chapter headed "Orders," which described an extremely lengthy, complex division order that "left practically nothing to the initiative of subordinates":[55]

> The order for the Cantigny attack is an extreme example of the extent to which minute details may be prescribed in preliminary arrangements for combat. It illustrates the maximum authority a commander can exercise over a subordinate who leads a unit in combat. In war of movement, such an order would be wholly impracticable, but it was well suited to the special conditions at Cantigny. The troops were inexperienced; the objective was strictly limited; there were good maps; there was plenty of time. Therefore the higher commander, having much at stake, exercised the maximum of authority.

Together, the chapter headings and aphorisms constitute a superb summary of modern warfare. A commentary on a contemporary campaign might substitute for the

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55 The version published in *Mailing List 1932-1933* is virtually identical. The last sentence in that earlier version adds ". . . exercised the maximum of authority *and regulated even minor details.*" Op. cit., p. 9.

archaic reference to "fire of machine guns" a discussion of employment of heavy anti-armor weapons, or mention a Global Positioning System receiver instead of the "marching compass," but any book of "lessons learned" from any set of engagements, in any war, could readily be organized into the framework of *Infantry in Battle*. Indeed, After Action Reviews, the learning tutorials that follow the mock battles enabled by modern training technique, tactical engagement simulation, could be presented in precisely this fashion.[56]

3. Marshall's Marching Compass

Forrest Pogue, Marshall's biographer, concluded that Marshall was essentially a self-educated man. Marshall read constantly, and broadly, but rarely in the so-called military classics. Some of his critics have held "that he had made no proper study of Clausewitz, and had only a textbook knowledge of other masters of the art of war."[57] But Pogue believed that Marshall would readily have admitted as much, and would have felt no sense of loss. Marshall had a strong faith in himself, iron self-discipline, and a compulsion to excel in whatever he undertook. Marshall's military development, and his confidence, proceeded primarily from constant study of his trade:

> He learned what made the Army work and then sought to improve the way it accomplished its purposes. Although a "student" by Army standards, he was not known as an original thinker. He was a pragmatic military scientist, tinkering with what he had until it worked better, rather than the intuitive genius who changes the nature of warfare. As a teacher he sought for ways to stimulate the thinking of his students and he provided an atmosphere in which bold experimentation might flourish.

But if Marshall was not himself an original thinker, he admired that capacity in others. Marshall prized thoughtfulness to the degree that he can fairly be said to have overvalued unorthodox approaches. At Benning he ordered that "any student's solution to a problem that ran radically counter to the approved school solution would be published to the class." Some officers have held that Marshall throughout his career had a predisposition to value novelty above soundness, and to prefer for advancement men willing to experiment, even when they did so unwisely.

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56 Tactical engagement simulation as practiced at Fort Irwin, CA, in the Army's National Training Center has evoked a "literature" of its own, so intense are the experiences of participants. The instrumentation system can reproduce the circumstances of the "battles" fairly exactly, and could readily underwrite a new version of *Infantry in Battle*. Cf. Bolger, D.P., *Dragons at War*, Novato, CA: Presidio Press, 1986. Also, McDonough, J.R., *The Defense of Hill 781*, Novato, CA: Presidio Press, 1988.

57 Pogue, F.C., *Education of a General*, op. cit., p. 347.

Marshall valued officers who could think for themselves, even as Morrison had taught him, and he had taught himself, and who could remain rational and self-directed amid the stress and confusion of battle. General Matthew Ridgway, who served with Marshall both in Tientsin and Benning, has described a Marshall-mentored field exercise in 1930 in which troops of the 29th Infantry, under command of students, were routed by an unexpected tank onslaught; Ridgway perceived that Marshall was much more interested in that instance in mentally conditioning the would-be leaders to the unexpected than in teaching anti-armor tactics. In other exercises at the Infantry School, Marshall would often allow students to succeed in their attacks until late in the afternoon, when most assumed the exercise was about to conclude, and then cause a punishing counterattack to materialize out of the dusk from the flank or rear, followed closely by Marshall himself to explain and to criticize.[58]

In the maneuvers he "staged" for active and reserve units, Marshall typically chose to command the Red Force, the maneuver enemy. His exercises were patently arranged with an awareness of changes that wireless communications, trucks, armor, and aircraft were exerting on the capabilities of forces, but Marshall's main interests were teaching participants how to command under stress, and for that reason positioned himself and his Red Force where he could provide stimuli for learning at just the right times and places. In modern terms, he was convinced that tactics are taught best through experiential learning, that failure in the field tutors more penetratingly than any lecture from behind a school podium, that soldiers learn kinesthetically, remembering best what they learned by doing.

Marshall was never satisfied that the Army knew how to train its infantry. He looked in vain for relatively simple formulae--set performances, exact standards--to guide the training and to evaluate proficiency in dismounted close combat. In 1935, when he was with the Illinois National Guard, he wrote of his dismay over the failure of his own branch to develop standards readily communicable to reservists, like those of the Artillery:[59]

> I feel at the present time we are still stumbling around trying to find a satisfactory method for training infantry regiments.
>
> The artillery scheme is pretty well cut out and the nature of their service in the field is along such precise lines, in a manner of speaking, that their

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58 Ibid., p. 252.

59 Two letters to a Regular instructor with the 130th Infantry Regiment, concerning an article the letter was writing for publication. *The Soldierly Spirit*, op. cit., pp. 480-481. Letter to Major Walter S. Wood, 20 December 1935. MS letter to Major W.S. Wood, December 30, 1935.

> training system seems quite satisfactory. The same applies to engineers, medical troops, and even to special troops. But when it comes to infantry, I think we are pretty much of a flat fizzle and it is up to the regular officers to devise a more efficient method of producing a genuine combat team.
>
> I spent July in camp with the three artillery regiments and I have seen their work at other times. I followed the Engineers pretty closely and have seen quite a bit of the Medical troops; and when I compare infantry communications with artillery communications, and infantry one pounder and trench mortar technique with artillery gun technique, I am appalled at the contrast. Even more depressing is the contrast between an artillery regimental team and an infantry regimental team. In the infantry they understand the initial deployment and the message center technique and a little about communications; but when it comes to coordinating the special weapons, as well as knowing how to use them in connection with the advancing infantry, when it comes to knowing how rear units are led forward, how communications are extended, how effective artillery fire support is actually secured--weakness is tragic. I think this is largely our fault, because I see the same weakness in regular infantry regiments.
>
> I am talking very frankly here, so this letter must be confidential, but am concerned to find a beginning to the solution which I know does not consist of merely learning to recite combat principles. . .
>
> What I am concerned about is how to develop a regimental team that can put troops in position in the dark and function, with all the weapons coordinating, at daylight. . . . At the present time I think this would be almost impossible of realization . . . [It has been] quite apparent to me that battalion commanders and staffs and company commanders, with their lieutenants, had a very vague conception of actually how to achieve a deployment that was not merely a collection of skirmish lines.

For all his tolerance for imagination and innovation, for all his admiration for ability to cope with the unexpected, Marshall was also a stickler for good order and discipline, in the field as well as in garrison, and he expected troops on maneuvers to reflect, through dress, deportment, and coordinated tactical action, their adherence to high soldierly standards. In early 1938, he responded to an inquiry on how to train from the Senior Instructor of the Virginia National Guard by forwarding the orders, instructions, and memoranda governing training for the Illinois Guard, together with the documentation for a planned Command Post Exercise (less the Red situation), together with this advice:[60]

> Glaringly apparent to me is the futility of paper in this work. Long mimeographs look impressive, but few read them and they clog the ways for important business. Lengthy and elaborate training programs and schedules instantly arouse my suspicions, as I have found that training usually varies inversely--after a certain period--with the mass of the

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60 MS Letter to Colonel Clifford Cabell Early, January 6, 1938.

program or schedule. Whenever I find one of my instructors getting out elaborate mimeographs on this or that, I am prepared to find him ineffective in getting instruction across.

Our greatest gain in efficiency has come thru training selected men to instruct in certain subjects, and with them, carrying on group instruction. These instructors--officers and non-commissioned officers--not only have to learn thoroughly their specific subjects, but they have to be taught "how to put them over," otherwise they merely *recite* what they know--and bore their groups to indifference. This is most important for efficiency.

We try to make the armory training period, from the exact hour of assembly to the close of the prescribed drill or instruction period, one of the strictest military procedure from the senior officer down to the janitor or furnace man--meticulous attention being paid to military courtesies, formalities, and procedures. No one is permitted to wander about, gossip here and there; groups proceeding to some room or place must march and be formally reported there, on arrival; etc., etc. Most of this has been brought about, not by issued orders; but by personal explanations of what is desired, to regimental commanders, leaving them free to appear as the initiators of such procedure.

For Marshall personally, such practical approaches to training troops and developing leaders advantaged strategy as well as tactics. For him, the "secret of future victories" was to combine "professional attainment, based on prolonged study, and collective study at colleges," with repetitive and cogent practice in troop leading. He knew better than most officers the "stumblings, blunderings, failures, appeals for help, and hopeless confusion" that characterized the American higher echelon headquarters during the opening of the Meuse-Argonne campaign in 1918.[61] He had testified before a Congressional Committee shortly after becoming Chief of Staff in 1939 that it was imperative to concentrate the troops of the Regular Army into divisions and corps to assure large-scale field exercises:[62]

Higher commanders and staffs must be given opportunities for training in the technique, tactics, and teamwork involved, and the troops must be accustomed to operating in large groups. The purely theoretical training in Army schools must be supplemented by practical training in the field. There is no known short cut to adequate combat training.

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61 "From the Chief's Office," *Infantry Journal*, March-April 1940, pp. 185-193.

62 Marshall, G.C., Testimony: "Emergency Supplemental Appropriation Bill, Fiscal Year 1940," Hearings before the Subcommittee on Deficiencies, House Committee on Appropriations, U.S. Congress, Washington, DC, November 17, 1939.

On the record, it seems evident that George Marshall--the Lieutenant Colonel teaching squad tactics in 1925; the Assistant Commandant so intent at the Infantry School during the early 1930's on teaching officers to think on their feet, and on learning from field exercises how to modernize force structure; the Colonel avid to use mock combat to train reservists for battle; the Brigadier General venturing a bold night attack in a field exercise in 1938--was eminently well qualified to direct the training of the Army during World War II.

The war might have followed a different course had that been his role. But George Marshall was called to become a principal counselor of the Commander-in-Chief in the greatest war of all history. Before hostilities began, there was time for him to involve himself in issues of Army training--sometimes to his hazard with his critics in Congress--but once the fighting started, he perforce had to rely on the officers he personally chose for high command in the expanding Army. The man he appointed to raise and train the Army's new divisions was Major General Leslie James McNair (Fig. I-6.).

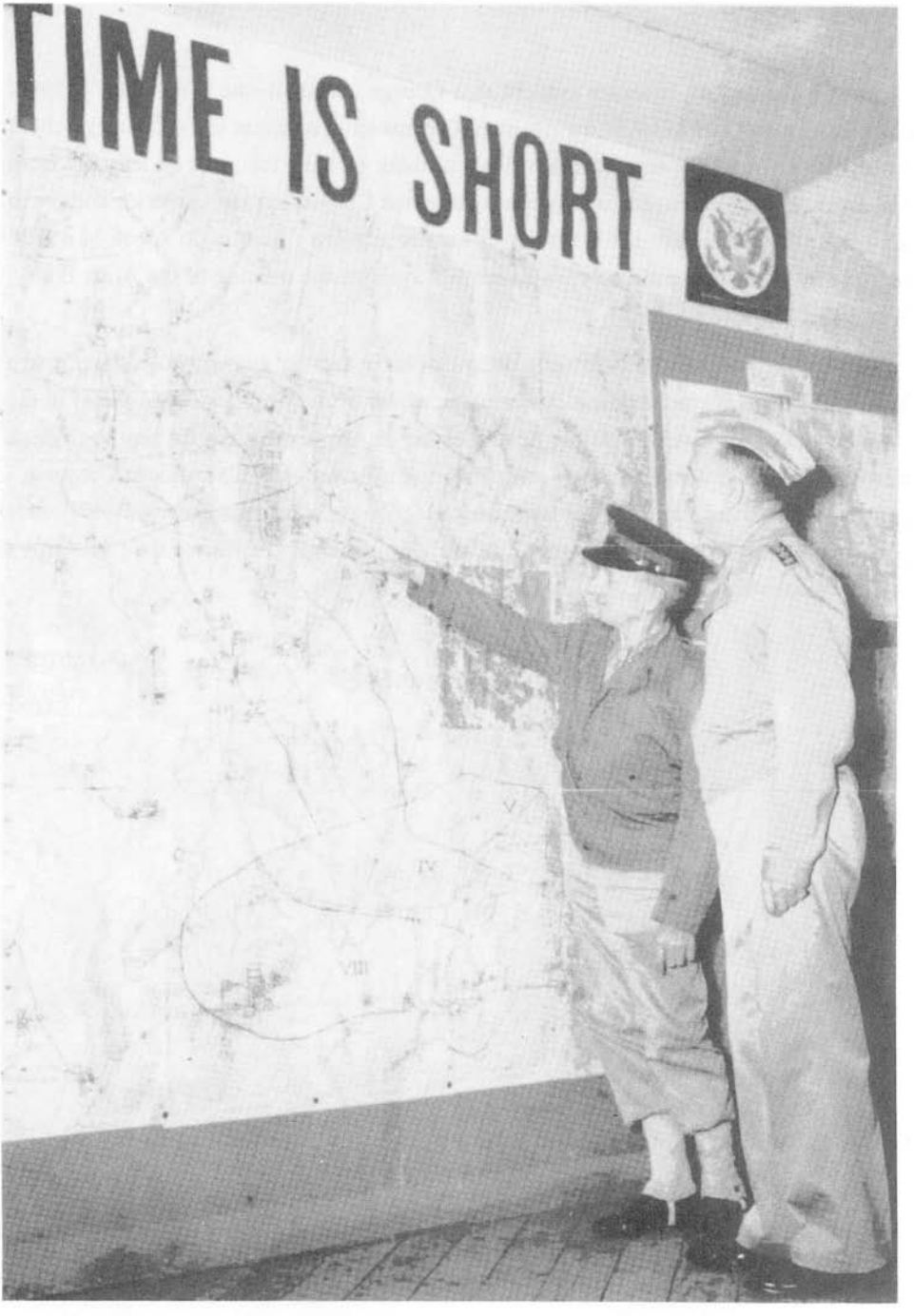


Figure I-6. Major General McNair Briefs General Marshall at the Louisiana Maneuvers, 1941

II. MCNAIR'S MISSION: PREPARING THE ARMY FOR WORLD WAR II

> At the present time we are still stumbling around trying to find a satisfactory method for training infantry. . . .
>
> Colonel G.C. Marshall, 1935

> Our Army is no better than its infantry, and victory will come only when and as our infantry gains it; the price will be predominantly what the infantry pays. These days the entire nation is following operations on its war maps. It is to be noted that the front line on those maps are simply where the infantryman is. It is true that he is supported magnificently by artillery and air, but this support is behind and above him. There is nothing in front of him but the enemy.
>
> Lieutenant General L.J. McNair, 1943

George Marshall's choice to train the Army for impending war was an unassuming, soft-spoken, diligent artilleryman, Lesley J. McNair, his cabin-mate en route to France in 1917 (Fig. II-1). Marshall looked to McNair to find ways and means to train a mobilizing mass army into units competent with modern weapon systems, prepared to act in battle upon appropriate doctrine, and imbued with an expectation of victory.

Toward the end of his life, Marshall reminisced about McNair as follows:[1]

> In connection with the training program--the methodical training. . . . I put this under McNair . . . so as to have it closely observed in all its workings throughout the country, not just under the War Department in a general way. It was specifically under General McNair, and he had a staff to do the inspecting and that sort of thing. McNair was a very able officer, a very conscientious officer, and he had a good headquarters at the War College. He is entitled to vast credit for the job that he did in that . . . I selected General McNair personally for this. . . .

Marshall recounted how in 1939 Leavenworth had in the drafting stage some 152 manuals setting forth modern doctrine. As Acting Chief of Staff he had telephoned the

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1 Marshall, G.C., *George C. Marshall Interviews and Reminiscences for Forrest C. Pogue: Transcript and Notes, 1956-1957*, Lexington, VA: George C. Marshall Research Foundation, 1986, pp. 279-280, 429.



Figure II-1. Lieutenant General Lesley J. McNair, 1942

Commandant at Leavenworth to direct that these be published within 4 months; the Commandant replied that "it can't be done," whereupon Marshall gave him one more chance to comply, and at repetition of the negative, relieved him, and put Brigadier General McNair in his place. The manuals were published. McNair, at Marshall's behest, also rectified the school's "following a very antiquated attitude in regard particularly to the Air Corps." Subsequently Marshall selected McNair to set up GHQ (General Headquarters) at the Army War College, to act as "the center of training" for the new Army, "to develop and state training needs, objectives, and methods; to inspect troop movements and follow up training programs; and to coordinate forces for common standards."[2]

Mrs. McNair stated that when General Marshall promoted her husband to the training job, he said: "Now that I have put this in your hands, I can forget all about it."[3] In 1940 and 1941, McNair saw Marshall several times a week, but after hostilities began, only rarely. McNair became commander of the Army Ground Forces in the reorganization of March, 1942, and remained in that position until July 13, 1944. His staff was austere by any standards, his leadership style self-effacing. He characterized himself as a man who, while others planned, attended to the details, a "pick-and-shovel man."[4] Marshall was well pleased with his choice: at the time he labeled McNair "the brains of the Army,"[5] and later remembered that McNair proved to be "about as able a trainer as we could get and very, very thorough." But, he noted sorrowfully:[6]

> McNair seemed fated. Each time he went abroad, he was struck. He went to Africa [1943] and was wounded there, fortunately not serious, but in the shoulder. Then went to Europe [1944] and was killed there by a bomb.

In assigning McNair to GHQ, Marshall gave him a daunting mission. Profound change seemed imperative: the threat from abroad was unprecedented; a plethora of new concepts of warfare were in play; and the U.S. armed forces were multiplying rapidly in

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2 Kahn, E.J., "Education of an Army," "Profiles" (two parts), *The New Yorker*, October 14, 1944, and ff. I, p. 32.

3 Whitaker, J.T., "These are the Generals--McNair," *Saturday Evening Post*, January 30, 1943, p. 13.

4 Kahn, "Education of an Army," op. cit., I, p. 30. II, p. 43.

5 Whitaker, op. cit.

6 Marshall, *Interviews and Reminiscences*, op. cit., p. 281. In the spring of 1943 McNair was wounded in Tunisia by German artillery, and was killed near St. Lô, Normandy, on 25 July 1944 by a fragmentation bomb dropped six miles short of its target by a heavy bomber of the U.S. Army Air Force. Twelve days later, his son, Col. Douglas McNair, a pioneer with Tank Destroyers, was killed in action on Guam. General McNair, at the time of his death, was 61 years of age, a permanent Major General, and the ranking temporary Lieutenant General.

size and complexity. As Marshall knew well, the Army was (and is) a conservative institution, progressing, if at all, by slow, evolutionary change, and instinctively resistant to bold departures. The work of training the Army for World War II had to proceed amid controversy over the design of the force--e.g., the size and composition of the infantry division; the role of horse cavalry and of aviation; provisions for tanks, and for antitank units--as well as the aggravations and disappointments of manufacturing, issuing and maintaining modernized materiel. McNair and his headquarters--GHQ, which became Army Ground Forces (AGF)--must be credited with prodigious accomplishments. McNair's judgements were not always above criticism, but given the analytical and pedagogic tools at his disposal, he personally earned Field Marshall Erwin Rommel's praise:[7]

> The organisation, training and equipment of the U.S. Army all bear witness to great imagination and foresight . . . [that Army] surpasses anything the world has seen.

A. NEW CAPABILITIES AND CONCEPTS

1. Mobile Combat

In the fall of 1939 the armed forces of Nazi Germany, employing combinations of armored and mechanized units supported by dive bombers that the Western press dubbed *Blitzkrieg* [lightning war], crushed the defenders of Poland. Nonetheless, given the unpreparedness of the Poles--magazines juxtaposed pictures of lance-bearing Polish cavalry to those of German tank columns--many "experts" discounted the German victory. But when, the following spring, German armor slashed through the French and British armies defending the Low Countries and France, the world was electrified. The defeat could not be attributed to tanks alone: German tanks were fewer in number than those of the Allies, and often inferior in quality. Rather, there appeared to be operative a surprisingly superior Nazi doctrine. In fact, of course, German concepts on how to fight had been derived in some measure from the infiltration tactics used in 1918 by the Kaiser's Army in its last offensive, had been adumbrated during the 20s and 30s in the writings of Fuller and Liddell Hart in England, and DeGaulle in France, and had been explained before the war in books and articles by Heinz Guderian and other contemporary German officers. Hitler's forces nonetheless deceived and shocked the Allies. The well-synchronized

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7 Rommel, E., *The Rommel Papers*, ed., Hart, L., New York: B.H. Harcourt, Brace, 1953, p. 521.

German air and ground attacks, with General Guderian's armored corps in the van, bypassed the bulk of the Allied forces; most of the defenders were unable to engage, and those that could were utterly overwhelmed. *Blitzkrieg* turned out to be an apt descriptor, for the speed and audacity of the German offensive swiftly disabled, disrupted, and demoralized Allied defenses.[8] In the United States, certain men studied these innovations carefully, and drew from them inspiration for profound change in their own professional pursuits.

a. Shaughnessy

Clark D. Shaughnessy, late in life, cited Heinz Guderian as the man who had exerted the greatest influence on his career. Shaughnessy was a professor of physical education at the University of Chicago and a consultant for the Chicago Bears, a graphically oriented conceptualizer who altered the way Americans thought about their game of football. Shaughnessy perceived a distinct parallel between military operations and football, holding, for example, that the single wing formation then in vogue was the football-equivalent of World War I infantry attacks, in that it threw all of the backfield at the point of attack, the ball carrier being preceded by three or more blockers, and the outcome "three yards and a cloud of dust." Shaughnessy obtained from a colleague at the University translations of Guderian's book on tank warfare entitled *Achtung! Panzer!*,[9] and of his 1937 article on a tank-centered "war of movement." Guderian's martial methods suggested to Shaughnessy a very different approach to offensive football, which he expressed in o—x play diagrams.[10] Shaughnessy's plays postulated a deep-attack variant of the hoary T formation: a man in motion in the backfield would mislead the defense on the thrust of the play. Then there would be a brief breach of the defensive line through which the ball carrier would burst at full speed. Linemen were to remain mobile, on their feet, using "brush" or "influence" blocks to delay the opposing linemen a second or two, then hastening down field to foreclose lateral movement of the defending backs. But in addition to explosiveness of attack, Shaughnessy's concept lent itself to further deception and flexibility, for the ball went first to the quarterback, operating well forward, just behind the center, virtually at the line of scrimmage, who could handoff to any one of three line-plunging backs, or keep it himself for a run or pass. Shaughnessy's innovations included

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8 Keegan, J., *The Second World War*, New York: Penguin Books, USA, 1989, pp. 54-87.

9 "Heads Up! Tanks!"

10 Furlong, W.B., "How the war in France changed football forever," *Smithsonian* 16 (February 1986): 125-138.

a 1,700 word cryptic command language for the quarterback to call out play options even as the defense redisposed before the snap (the forerunner of the contemporary "audible").

In the fall of 1940, two football teams adopted Shaughnessy's system, the Chicago Bears and Stanford University. Both teams swept through their seasons as decisively as Guderian's armored divisions had plunged across France, the Bears winding up in a Shaughnessy-mentored rout of the Washington Redskins, 73-0, and Stanford, coached by Shaughnessy, in a signal win over Nebraska in the Rose Bowl.

b. Patton

Another attentive reader of Guderian's writings was Colonel George S. Patton, Jr., Cavalry, U.S. Army. In World War I, Patton had been the first U.S. officer assigned to a tank unit, and had earned the Distinguished Service Cross leading tanks during the Meuse-Argonne offensive. Patton, if flamboyant and profane, was a redoubtable professional soldier. He and George C. Marshall were well acquainted, and in some respects, like-minded. An omnivorous reader and prolific writer, Patton excoriated Army training of the 20s and 30s for reflecting the cerebrations of the schoolroom, the exactitudes of the drill field, and romance about the accuracy of American riflemen, rather than battle's hurly-burly and the criticality of dominant fire and decisive movement. In 1935, in a critique of maneuvers he had observed in Hawaii, Patton wrote a report that castigated its lack of realism, and echoed, at least in part, Marshall's letter to Heintzelman:[11]

> Many officers have acquired information that they are either unwilling or mentally incapable of using. The result is that they try to remember rather than to think.
>
> [*The brigade field order was far too long, drawn without the benefit of reconnaissance, and issued too late.*] The operation was conducted as a map problem because our officers are familiar with them, not as a war problem because our officers are not familiar with maneuvers.
>
> [*Telephone wire was used to excess*] The craze for wire is largely due to the inordinate demands made by higher units for reports from the front. . . .
>
> If higher commanders would go up and look they would do some good, at least they would inspire the men . . . the place of the brigade commander is with his men, not with his telephones.

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11 Blumenson, Martin, *The Patton Papers 1885-1940*, Vol. I, Boston, MA: Houghton Mifflin Company, 1974, pp. 896-911, 992-993.

[*Units were excessively dependent on trucks*] The army exists to kill men--not to groom vehicles.

George Patton, like Marshall, was no theoretical innovator, but a military pragmatist, an experimenter. Patton thought of himself as a cavalryman first, and a tanker second; during the 1920's and 1930's, his professional focus was the modernization of horse cavalry. During those years he often endorsed the dictum explicit in Army doctrine through the year 1939: "As a rule, tanks are employed to assist the advance of infantry foot troops, either preceding or accompanying the infantry assault echelon."[12] In early 1939, however, he read a translation of Guderian's writings, and was powerfully stimulated by Guderian's suggestion that, precisely opposite to U.S. doctrine, infantry ought to be used to assist the advance of tanks. Patton's voluminous notes to himself on Guderian reflect the tactical style for which the American later became famous, well-summed in these sentences: "Mobile forces should be used in large groups and [be] vigorously led. They must attempt the impossible and dare the unknown."[13]

In 1939 Patton was 54 years of age, commanding the cavalry regiment stationed at Fort Myer, VA, a position that involved him less with preparation for war than hounds, hunts, polo, parades, and protocol. But the German campaign in Poland jarred the tenor of life of the garrison at Fort Myer no less than that of other military professionals all over the world. It seemed possible to Patton that tanks in conjunction with closely supporting airplanes, self-propelled artillery pieces, and motorized infantrymen could break defensive lines and roam at will through enemy rear areas, completely demoralizing outflanked and confused combat troops, and paralyzing command nerve centers. Patton sought a more active command. Among other strategems, he presented a set of sterling silver stars to Major General Kenyon A. Joyce, commander of the the 1st Cavalry Division in Texas, when he was promoted from brigadier. Patton also aimed at getting into the field on maneuvers, because he knew that was where the new Chief of Staff's attention would be centered.

c. Maneuvers 1935-1939

The "corps area maneuvers" that Marshall had deemed of such importance during the 1930's were mostly small affairs, chiefly intended for units of the reserve components.

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12 Ibid., p. 1048.

13 Blumenson, M., *The Patton Papers 1940-1945*, Vol. II, Boston, MA: Houghton Mifflin Company, 1974, p. 8.

Marshall and other forward-looking Regulars had also used them for modest experiments with command and control, mobility, and force design. But as mechanisms for training in the command of large formations, they suffered from lack of corps or army headquarters, and a paucity of support troops. In 1938 Third Army had essayed two-sided, free-play maneuvers, but could field scarcely a division on either side, and few other units. (Nonetheless, the Third Army commander, based on those 1938 exercises, was able to recommend retention of horse cavalry in the Army force structure.)

Patton participated in maneuvers in 1939, held at Plattsburgh, NY, and Manassas, VA. First Army, the controlling headquarters, was a paper organization with two officers permanently assigned, and the remainder of the staff temporarily detailed. Compared with the "type field army" which figured in instruction at Leavenworth and the Army War College, First Army had but 23 percent of its authorized manpower, 33 percent of machine guns, 17 percent of trucks, 6 percent of infantry mortars, and 0 percent of 155-mm artillery pieces. To portray a mechanized force for the purposes of the maneuvers, First Army had to borrow vehicles. To execute one river crossing in the vicinity of Plattsburgh, it had to assemble one half of all the engineer bridge pontons in the entire U.S. Army.

Major General Hugh A. Drum, First Army commander, knew Patton well; Drum had recommended Patton for his DSC in France, and Patton had served under his command in Hawaii. Before the maneuvers, Patton wrote him to urge that he avoid constricting the boundaries assigned to units lest cavalry be foreclosed from exploiting its ability to conduct wide flanking movements.[14]

> Knowing your interest in realism [in training] I am taking the liberty of making the above suggestion, so that we can attack from the rear, which in my opinion, is the proper direction of attack for horse and mechanized Cavalry. . . .

Patton's performance during the Manassas phase of the maneuvers foreshadowed, in its verve, those for which he was later to become famous, but in 1939 he was playing to the wrong audience: Drum's conclusions from the maneuvers were that, while the Army might usefully interest itself in enhanced mobility for some few units, it should remain organized for sustained combat, by which Drum meant retaining the World War I "square" division, built around four infantry regiments, with a strength of 22,000.

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14 Blumenson, M., *The Patton Papers, 1885-1940*, op. cit., pp. 1026-1028.

When Marshall became Chief of Staff he moved, almost at once, to build the field command structure for a large force, and to adopt the "triangular division," with a strength of 15,500, organized with three infantry regiments of three battalions each, instead of the old 4 × 4 "square" pattern.[15] From the "streamlining" of the division, from closure of officer schools, and from small increases in strength approved by the President, Marshall was able to flesh out corps and field army headquarters staffs, and to commence to build corps and army support units. He directed that maneuvers be conducted in the spring and summer of 1940 to test these new organizations.

d. Maneuvers 1940

Immediately, Patton perceived opportunity. Through a long-time professional acquaintance, Patton sought and obtained an assignment as an umpire in the Third Army maneuvers planned for Georgia and Louisiana in the spring of 1940. Thus it was that in May 1940, while German armor broke the back of the French Army in a clash of some 6,000 tanks, George Patton was in Louisiana, observing mock combat involving less than one tenth as many--American products puny of gun and armor compared with European main battle tanks.

The Third Army Maneuvers of 1940 were designed to validate the new "triangular" division, and to test the ability of the new type of corps--a tactical headquarters for directing two or more divisions--to deploy such divisions over long distances against a mobile enemy. Although the Army then had only two armored brigades, both were to participate, formed into a provisional armored division, to experiment with ways in which the Air Corps could support them, and to evaluate their usefulness against Major General Joyce's 1st Cavalry Division.

Before the exercises began, Patton's sympathies were plainly with the horsemen, and his correspondence with Joyce imparted privileged information on planning for the maneuver that, in all fairness, Joyce should not have received. But when the forces took the field, Patton could see that Joyce's cavalry units could not hold their own against mechanized troops. It was evident that machines, not horseflesh, would dominate future battles.

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15 The German Army had adopted a three-regiment infantry division in World War I, and had retained that basic design.

In the end-of-exercise critique, the new corps and division organizations were judged sound. The army commanders and the umpires faulted participants for defects like those noted by Patton in the Hawaii exercises: lack of command aggressiveness, headquarters-bound command groups, inadequate reconnaissance, and over-dependence on roads and vehicles.[16] Importantly, all participants agreed that the Army ought to form, as rapidly as feasible, a minimum of one armored division. Patton thereupon pursued command of such a division.

2. Marshall: A Force to Fight in Europe

In the Departments of War and Navy in Washington, the sudden upsetting of the balance of power in Europe caused profound strategic reassessment. The largely theoretical Army and Navy "Color Plans"--each color designated the plan for war with a particular foreign power--had been changed in the late 1930's to address probable contingencies, and to embody concepts such as hemispheric defense and coalition warfare. Nonetheless, only one of five pre-*Blitzkrieg* "Rainbow Plans" considered offensive operations in Europe, and the Navy had been primarily interested in RAINBOW 2, the plan that accorded priority to offensive operations in the Pacific against Japan, campaigns in which land forces would have had a secondary role. Yet it was the Navy that led the way in coping strategically with the fall of France. In November 1940, Admiral Harold R. Stark, Chief of Naval Operations, published a study acknowledging that U.S. security was closely tied to that of England: ". . . if Britain wins decisively against Germany we could win everywhere; but that if she loses the problem confronting us would be very great; and while we might not *lose everywhere*, we might, possibly, not *win* anywhere." Admiral Stark concluded that the United States must be prepared to conduct extensive and sustained land operations on the continent of Europe, and to accept a "strict defensive" in the Pacific, per RAINBOW 5. By the spring of 1941, Stark's concepts had been adopted formally in British American Staff Talks.[17]

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16 Moenk, J.R., *A History of Large-Scale Maneuvers in the United States, 1935-1964*, Fort Monroe, VA: U.S. Army Continental Army Command, 1969, pp. 26-33.

17 Matloff, M., "The American Approach to War, 1919-1945," In *The Theory and Practice of War*, ed., Howard, M., pp. 229-237, Bloomington, IN: Indiana University Press, 1975. Also, Millis, W., *Arms and Men*, New York: Mentor Books, 1958, p. 244. Morton, L., *Command Decisions*, ed., Greenfield, K.R., United States Army in World War II, Washington. DC: The War Department. Office of the Chief of Military History, Dept. of the Army, 1960, pp. 11-47. Reprinted in *20th Century War: The American Experience*, Fort Leavenworth, KS: Combat Studies Institute, USAC&GSC, 1985, pp. 127-158.

By the summer of 1941, General Marshall and the Army General Staff were contemplating a structure of some 215 divisions and 60,000 aircraft, chiefly to confront the Germans in Europe.[18] Two armored divisions were created in 1940; by 1943, 16 would be in existence. Patton was given temporary command of the 2d Armored Division shortly after it was activated at Fort Benning in 1940, and by April 1941, was confirmed in command and promoted to Major General.

B. RACE AGAINST TIME

1. Tennessee Maneuvers, 1941

GHQ maneuvers scheduled for 1941 offered Patton, who was itching to use his new instrument of war, his first opportunities to show the Army what an armored force could accomplish. The 2d Armored Division was slated to take part in the corps-level war games scheduled for June in Tennessee, and for army maneuvers in August and September in east Texas and Louisiana. Patton was anxious that the umpires be instructed beforehand in the genuine power of an armored division, so that his troops would receive proper credit for their capabilities. In the maneuvers, one side would be allowed to advance so long as umpires accompanying both sides agreed that it possessed a definite advantage over the force opposing, a determination made from a set of rules based on relative strength and tactical posture, and communicated through umpire flags and other signals. Patton wrote to a friend on General McNair's staff that the GHQ manuals for umpires were out of date, in that they did not recognize that "the primary function of an armored division is to disrupt [enemy] command communications, and supply."[19] Commanders who failed imaginatively to exploit the advantages of mobility should be severely penalized, for they were:

> . . . not playing the game. The effect of surprise as to time or direction of attack should be given tremendous weight. In reading over the rules, I find no emphasis on this. . . . [Yet] new ideas are what is winning this war. . . .

In May 1941, Patton mailed to friends a copy of remarks he had made to his division; the soldiers had been assembled before a stage from which Patton could address

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18 Matloff, M., *Strategic Planning for Coalition Warfare, 1943-1944*, United States Army in World War II, Washington, DC: The War Department. Office of the Chief of Military History, Dept. of the Army, 1959, pp. 10-11.

19 Blumenson, M., *The Patton Papers 1940-1945*, op. cit., pp. 29-43.

them through a microphone-amplifier-speaker system. Patton's transmitting letter to Secretary of War Stimson stated that "so far as I know, it is the first time a division commander ever talked to his division at one time."[20] He drew on his reading of Napoleon's speeches, but he sounded less like the Corsican than a football coach in a pre-game locker-room pep-talk:

> An armored division is the most powerful organization ever devised by the mind of men. . . . An armored division is that element of the team which carries out the running plays. We straight-arm, and go around, and dodge, and go-around. . . . We must find out where the enemy is, we must hold him, and we must go around him. . . . One of the greatest qualities which we have is the ability to produce in our enemy the fear of the unknown. Therefore, we must always keep moving, do not sit down, do not say "I have done enough," keep on, see what else you can do to raise the devil with the enemy. . . . There are no bullets in maneuvers, and things sometimes get a little dull. But play the game . . . the umpires have the job of representing the bullets . . . Try above all things to use your imagination. Think this is war. "What would I do if that man were really shooting at me?" That is the only chance, men, that you are going to have to practice. The next time, maybe, there will be no umpires, and the bullets will be very real, both yours and the enemy's.

Patton announced that far from using tanks to back infantry assaults, "it is the doctrine of this division to attack weakness rather than strength. . . ."

> I can conceive of nothing more futile than to send expensive tanks against a prepared position. The doctrine for so doing was originally written by me and was based on the fact that in 1918 tanks were invincible, but a careful analysis of what the Germans have done leads me to a totally different solution for present day armored forces. . . . I wish to assure all officers and all men that I shall never criticize them or go back on them for having done too much but that I shall certainly relieve them if they do nothing. You just keep moving. . . .

Patton enjoined his leaders to play hard, and to play to win, for the stakes were high:

> I am very insistent that all commanders who have an umpire take him absolutely into their confidence. He is not a stoolpigeon or a hostile spy. If he knows what you are trying to do he can be useful and be at the point of combat. If he does not know what is going on, he is simply unnecessary baggage. . . . I want to bring to the attention of every officer here the professional significance which will attach to the success or failure of the 2d Armored Division in the Tennessee Maneuvers. There are a large number of officers, some of them in very high places in our country, who through lack of knowledge as to the capability of an armored division are opposed to

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[20] Ibid, p. 32.

> them and who would prefer to see us organize a large number of old-fashioned divisions about whose ability the officers in question have more information. It is my considered opinion that the creation of too many old type divisions will be distinctly detrimental and that the future of our country may well depend on the organization of a considerably larger number of armored divisions than are at present visualized. Therefore it behooves everyone of us to do his uttermost to see that in these forthcoming maneuvers we are not only a success but such an outstanding success that there could be no possible doubt in the minds of anyone as to the effectiveness of armored divisions. Bear this in mind every moment.

Patton began to publicize his nickname for the division, "Hell on Wheels," and made it known that his intentions for his maneuver opponents were to "Hold 'em by the nose and kick 'em in the pants." As was sometime to be the case in future years, Patton's rhetoric outstripped the performance of his troops, at least initially. In Tennessee, in early engagements, Patton's tanks were unable to break through defending infantry, and Patton was criticized by umpires for failing to coordinate the operations of his subordinates. But Patton and the 2d Armored showed that they could learn from failure, and in the next phase of the maneuvers, the division launched a well-reconnoitered night attack, followed by a four-pronged exploitation that by 9 a.m. had captured the enemy commander and his battle staff, and forced the umpires, at 11 a.m., to stop the exercise well ahead of schedule. Major General Lesley McNair witnessed this feat of arms.

In the next phase of the maneuvers, Patton's forces knifed through the defenders with such speed that the umpires stopped the action after nine hours instead of the allocated two days. And for its finale, the 2d Armored Division swept wide around the defenders, disrupted their rear area, and captured its assigned final objective several hours ahead of the planned end to the maneuvers. Secretary Stimson was a witness to that triumph, and Patton was able to point out to him that although the division had covered long distances, "in some cases over 110 miles, every fighting vehicle in the division, except two tanks and a scout car, got to the place it was supposed to be in time to deliver the attack. . . ." Patton emerged from the Tennessee maneuvers as the rising star of the Army.

The Tennessee maneuvers also conveyed lessons important for future training: units exhibited ignorance of doctrine, and tended to neglect reconnaissance and security, to cling to roads, and otherwise to display tactical ineptitude. Larger headquarters were dismayingly clumsy at coordinating the actions of the several arms and services.

2. Louisiana Maneuvers, 1941

For maneuvers in August and September, McNair's GHQ fielded a force more than twice the size of the entire Army of 1939: 400,000 troops under two field army headquarters, including the 1st and 2d Armored Divisions operating together as a corps, and the first-ever use of parachute units. Over 1,000 aircraft also participated. From Marshall's perspective, the maneuvers were a political as well as military necessity. The public needed to be shown that an American Army could be raised and trained for modern warfare. Selective Service was due to lapse in October, and the climate in Congress made extension less than assured, so that Marshall and McNair literally had to use the troops before the Army lost them. Moreover, the British needed a demonstration of American military capability as well as American materiel and American good will. The great war games captured headlines throughout the nation, and served political purposes well.

General Marshall, in a speech to the American Legion, characterized the maneuvers then underway as a field laboratory to test new methods of applying fundamental tactical principles, such as experimenting with the use of, and means of defending against, tanks. In some cases, had the units been in real war, entire divisions might have been annihilated or captured, but as it was, they learned from their mistakes, replaced ineffective leaders, and developed their fieldcraft:[21]

> The present maneuvers are the closest peacetime approximation to actual fighting conditions that has ever been undertaken in this country. But what is of greatest importance, the mistakes and failures will not imperil the nation or cost the lives of men. . . .

Marshall needed to promote maneuvers, because they were being portrayed in the press, with some accuracy, as an expensive meandering of units bumbling about the countryside, snarling junctions, disrupting civil traffic, tearing down fences, ruining cornfields, and rutting roads. One solon, who objected vociferously to paying so much for so many obvious mistakes "playing at war," drew this retort from Marshall: "My God, Senator, that's the reason I do it. I want the mistake down in Louisiana, not over in Europe, and the only way to do this thing is to try it out, and if it doesn't work, find out what we need to make it work."[22]

Before Second and Third Army took the field, Lieutenant General McNair of GHQ sent to the Army commanders extracts from letters of soldiers complaining about poorly

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21 Pogue, Forrest C., *George C. Marshall: Ordeal and Hope, 1939-1942*, op. cit., pp. 162-163.

22 Ibid., p. 89.

planned or inadequately explained maneuvers, waste of time through idleness or delay, and lack of confidence in officers and noncommissioned officers. McNair enjoined more attention to small-unit troop leading, and closer attention to creating combat realism. McNair had attributed many of the shortcomings of the 1940 maneuvers to faulty umpiring that had failed to establish conditions close to war, and therefore had taken upon himself the task of rewriting the GHQ *Umpire Manual*, to insure more realism. He instructed his commanders that they would be free tactically to respond to the circumstances of battle, but they should neither seek nor use sources of information save those they could expect in combat, nor should they establish any communications unavailable in an overseas theater. Properly conducted, the maneuvers of 1941 should expose flaws in doctrine, training, force design or materiel. McNair wanted the chips to fall where they may: "The truth is sought, regardless of whether it is pleasant or unpleasant, or whether it supports or condemns our present organization and tactics."[23]

During World War I, all training of divisions and higher echelon headquarters had been conducted in France by the AEF. Marshall and McNair were determined to relieve overseas theater commanders of that burden, and to train general officers and General Staff officers no less assiduously than lieutenants. The 1941 maneuvers were directed by McNair's GHQ as part of a countrywide training program which mandated that each corps would train for 2 months under the direction of its army commander, and following command post and field exercises, would maneuver forces either against those of another corps, or against one of its own divisions. In the fall of 1941, following each Army's training by itself, there was to be a GHQ-directed maneuver of army-versus-army. These were to be free play--GHQ would set the scene by orders issued to the opposing sides, each of which could thereafter implement its orders as its commander saw fit. The outcome of the resultant battles would be adjudicated in the field by GHQ umpires. McNair further ordered that all field exercises and maneuvers be followed promptly by an after-action review or critique, so that lessons learned would be better understood by all. To avoid command embarrassment, subordinate officers were to be excluded from the oral critique, but there could be supplemental written comments or reports. The Louisiana Maneuvers followed McNair's scheme.

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23 Greenfield, K.R., Palmer, R.R., and Wiley, B.I., *The Organization of Ground Combat Troops*, United States Army in World War II: The Army Ground Forces, Washington, DC: Historical Division, Department of the Army, 1947, pp. 44-45, 47.

"Hostilities" between Second and Third Armies began on 15 September 1941 and concluded on 28 September.[24] The exercise proceeded in two phases: in the first, GHQ ordered Second Army, commanded by Lt. General Ben Lear, to cross the Red River and attack to the southwest; for its mission, Second Army was assigned the bulk of the armored forces available, and plus attack aviation that included Navy dive bombers. Third Army, under Lt. General Walter Krueger, commanding a force of seven infantry divisions, with a reserve of mobile antitank units, received orders to attack to the northeast. McNair's concept was to see whether a small force could use superior mobility to compensate for inferior numbers in a head-on confrontation. In the ensuing battle, General Krueger proved to be the more resourceful and adaptive of the two commanders, and his infantrymen and antitank gunners succeeded in defeating both the 1st and 2d Armored Divisions--although umpiring the close combat occasioned considerable acrimony from both sides. Second Army was thrown onto the defensive, and when GHQ terminated the exercise, was being pressed hard.

In the second phase of the maneuvers, Third Army was assigned the 1st Armored Corps headquarters, and the 2d Armored Division, swapping these for antitank units. When the realignments were complete, Third Army outnumbered Second Army four corps to one, eleven divisions to seven. The GHQ order to Third Army directed an offensive; Second Army was told to defend, McNair's concept being to evaluate the defensive prowess of a small force. General Lear directed a delay on successive positions, with emphasis on demolishing bridges and culverts on every road, and on refusing any general engagement. Third Army launched an attack along a broad front, with its armor in reserve. Second Army delayed skillfully and methodically, and a hurricane was lashing the area. The frontal attack of Third Army made slow, steady progress, but offered little prospect of bringing Second Army to battle. General Krueger then decided to strike around the western flank of Second Army, going deep, for his enemy's rear (Fig. II-2).

The Third Army plan, which has been attributed by General Clark to Col. Dwight D. Eisenhower, Krueger's Chief of Staff, called for 2d Armored Division to advance in two columns, both swinging west into Texas and then north around the enemy's right flank. The inner column consisted of the 2d Armored Division's tanks, followed by the the 2d Infantry Division (motorized). The outer column, led by Major General Patton, (Fig. II-3) consisting of the 2d Armored Division's infantry, reconnaissance elements, and

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[24] Gabel, C.R., *The U.S. Army GHQ Maneuvers of 1941*, Washington, DC: Center of Military History, U.S. Army, 1991, pp. 64-114.

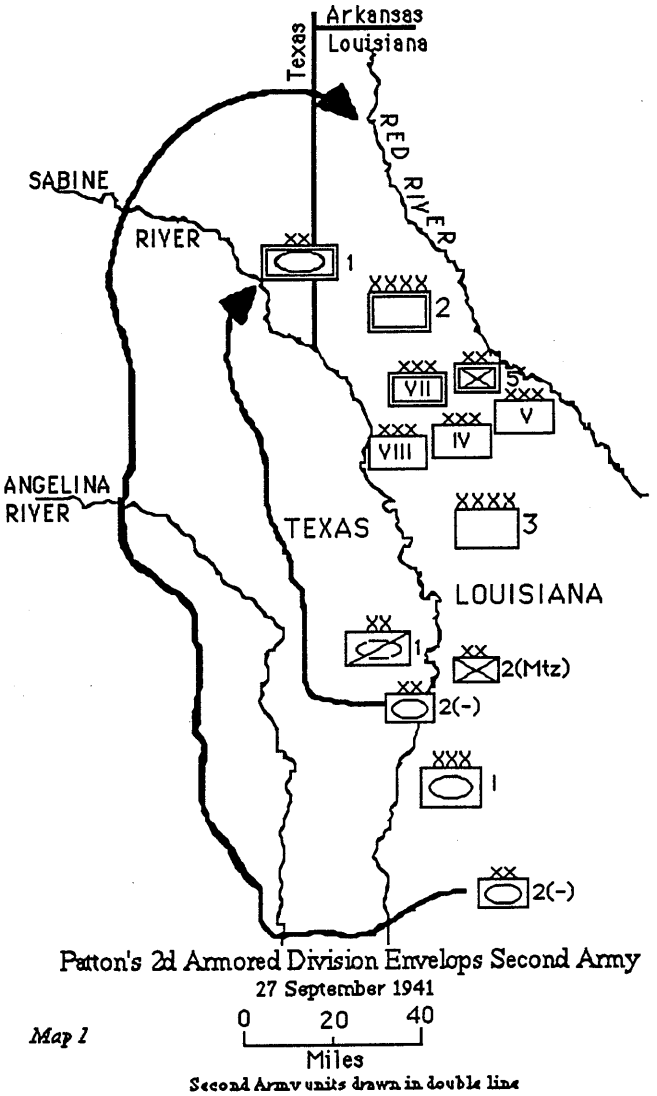


Figure II-2. Patton's 2d Armored Division Envelops Second Army, 27 September 1941.

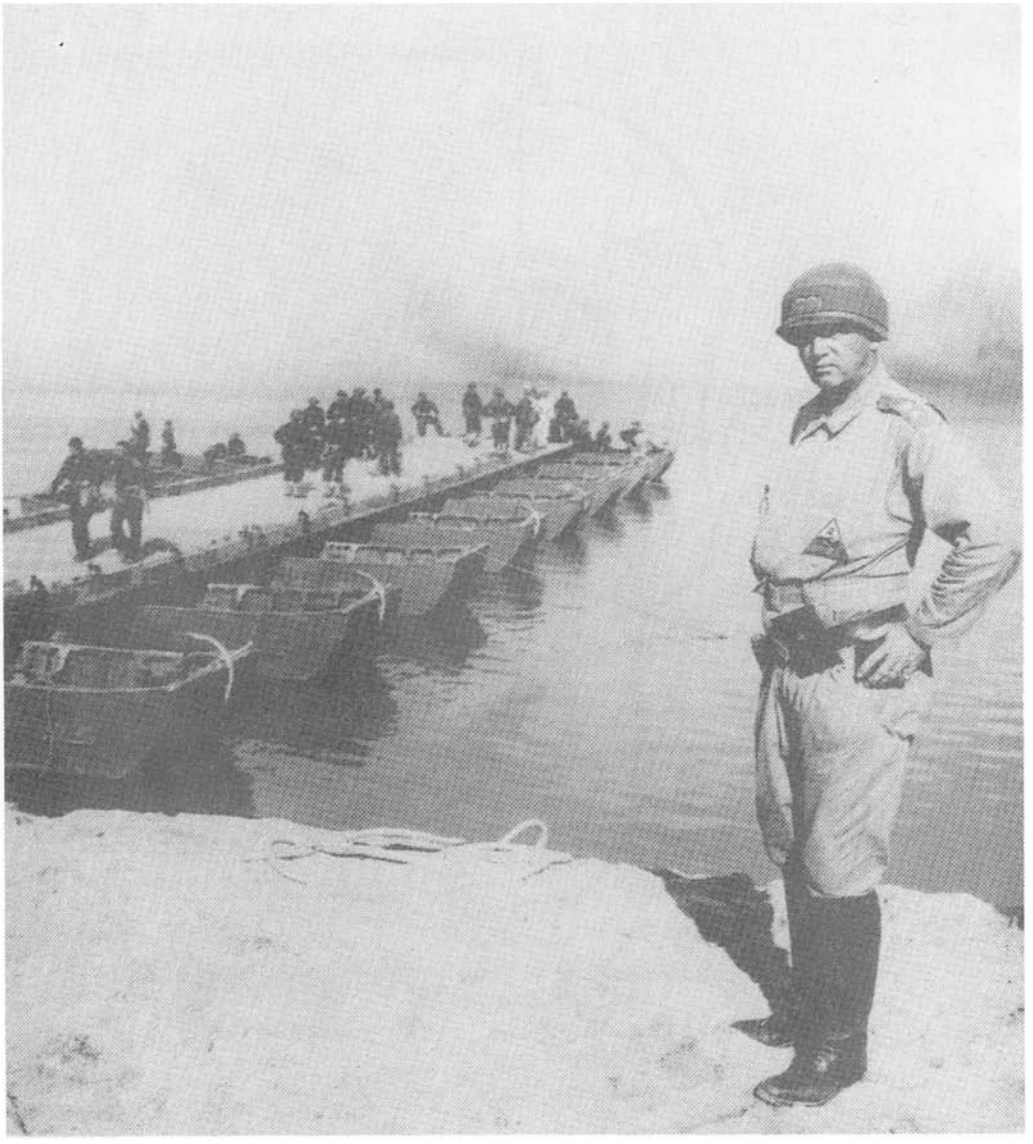


Figure II-3. Major General Patton at the Red River, Louisiana Maneuvers, September 1941

artillery, mostly in wheeled vehicles, crossed the Sabine River, then the Angelina River, and finally the Sabine again--all these streams approaching flood stage--in a wide hooking movement that covered some 200 miles in 48 hours. Together, these moves forced Second Army to abandon its scheduled withdrawals, and to give battle. Second Army responded to threats from the west and north by fragmenting its reserves--especially the 1st Armored Division--despite the fact that the attackers were overextended logistically, and therefore vulnerable to a concerted counterattack, or to interdiction. McNair called a halt to the exercise before the issue could be decided.

The 2d Armored Division's flashy final sweep notwithstanding, its tactics were fundamentally flawed: Patton had taken the infantry, reconnaissance units, and the artillery on one axis, and sent his tanks on another, well beyond mutual support. His tanks were therefore consigned to cope with antitank guns on their own, a costly practice, given the rules in the *Umpire Manual*. After the maneuvers, Patton confessed to his officers that: "We still fail to use every weapon every time. . . . Each time we fight with only one weapon when we could make use of several weapons, we are not winning a battle, we are making fools of ourselves." None of the other armored or mechanized units did much better, particularly when it came to using infantry to clear antitank guns from the path of tanks; ultimately, failures of the armored divisions in Louisiana led to a sweeping reorganization to facilitate forming combined arms teams for combat.

The maneuvers had fostered a much better appreciation among ground officers of the combat potential of aviation for gathering intelligence or delivering firepower, but had also exposed fundamental problems with air-ground cooperation. Although the Chief of Staff of the Army exercised directive authority over the Army Air Corps, there had been a long-standing agreement that the Air Corps would not operate in portions of the battlefield within range of artillery, and the Air Corps had therefore developed neither doctrine nor equipment for close air support. Navy dive bombers provided by Admiral Stark proved to be the only aircraft capable of precision strike close to friendly forces. Requests for air support passed up the chain of command of the field army, and thence to the air task force headquarters, occasioning long delays. When such a request was approved, aircraft arriving at the target had no way to communicate with the unit that had initiated the request. There were no prescribed methods for marking front lines or designating targets. Nor did remedies emerge after the maneuvers.

Logistically, the maneuvers had been helpfully instructive. Both armies had had to reposition their communications zones between the first and second exercises: General Marshall personally overrode staff objections to the cost and administrative complexity of moving bases. In later years Marshall cited that as an instance of essential training for his senior subordinates:[25]

> Eisenhower, for example, was chief of staff of General Krueger's [Third] Army in the South. All of them learned a great deal. I remember in the 500,000-man maneuver down in Louisiana, I directed that they change their bases on each side. They told me that it would take a month for something like that and be very, very expensive. Well, I said, they would have to do it anyway. They would have to do it in Europe, and they would have to do it here. So they changed the bases. I remember in one case it took ten days, and cost 40,000 dollars. That seems a large sum for a maneuver like that. But it was a very economical sum when it came to the efficiency it developed in the troops. That is the reason that Patton and Hodges and Bradley were able to move as rapidly as they did across the face of Europe.

The Chief of Staff of the Army visited the Louisiana Maneuvers twice. When they were over, he agreed with his senior commanders that the exercises had revealed serious shortcomings. Among these were inadequate measures and means for coordinating air with ground operations, feeble combat intelligence, and a lack of tactical proficiency and discipline among the troops. McNair in his critique expressed satisfaction with progress in providing mobile antitank defenses.[26] There was an evident need for more and better equipment, and more hard training, but Marshall thought that that there had been demonstrated an encouraging expansion of overall capabilities. Both McNair and Marshall held the view that the weaknesses evident in the maneuvers stemmed mainly from poor leadership.

On 29 September, one day after the end of the Louisiana Maneuvers, McNair submitted to the Chief of Staff a list of all division commanders, with a brief recommendation on whether or not they were fit to remain in command. Subsequently, action on the list precipitated a political controversy over a press-touted purge of National Guard commanders. It was certainly true that the maneuvers had drawn attention to certain aged and outdated commanders, National Guard and Regulars alike, and had provided a showcase for the leadership abilities of other soldiers who were later to figure importantly

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25 Pogue, *Ordeal and Hope*, op. cit., pp. 89, 164.

26 Gabel, C.R., *Seek, Strike and Destroy: U.S. Army Tank Destroyer Doctrine in World War II*, Leavenworth Papers, No. 12, Combat Studies Institute, U.S. Army Command and General Staff College, 1985, pp. 14-15.

in America's war effort; the umpires' accolades, and the lion's share of publicity, went again to George S. Patton and his 2d Armored Division, but Marshall also took note of other solid performers.

Mark Clark has recalled that the final critique of the Louisiana Maneuvers brought together in one room virtually every U.S. Army officer who would subsequently serve in a senior position in any theater during World War II, in either the Army or the Army Air Forces. General Marshall had authorized McNair to conclude the maneuvers with announcements of the latest promotions to flag rank, a list no doubt influenced by the maneuvers themselves. Clark, who had been promoted to brigadier general without ever serving as a Colonel, and was then McNair's principal assistant, rose to read the names of the "makes." As Clark did so, each name was greeted with cheers and applause. Clark was impelled deliberately to skip over the name of an old comrade, Col. Dwight D. Eisenhower (Fig. II-4). Eisenhower had earned wide respect for his performance during the maneuvers, and his body language communicated deep consternation at his name's being omitted. Finally, Clark admitted that he had made an egregious error, and, amid whoops and laughter, read out Eisenhower's name. Somewhat later, after Pearl Harbor, General Marshall asked Clark, as someone knowledgeable of younger "comers," for names of 10 officers whom he should consider to head up the War Plans Division of the War Department General Staff. Without hesitation, Clark listed: D.D. Eisenhower, D.D. Eisenhower, D.D. Eisenhower, ditto. . . . Thus the Louisiana Maneuvers, and Mark Clark, launched the future SACEUR.[27]

3. Carolina Maneuvers, 1941

In the fall of 1941 Marshall told the graduates of the first class of the Officer Candidate School at Fort Benning that: "Warfare today is a thing of swift movement--of rapid concentration. It requires the building up of enormous firepower against successive objectives with breathtaking speed. It is not a game for the unimaginative plodder."

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27 Lieut. General J.R. Thurman, USA (Ret.), from conversations with General Clark, Walter Reed Army Medical Center, March, 1984. Cf. Blumenson, M., *Mark Clark*, New York: Congdon & Weed, 1984, pp. 53-54.



Figure II-4. Brig. Gen. Mark Clark, GHQ, and Col. D.D. Eisenhower, Third Army, Louisiana Maneuvers, 1941

In November 1941, in the Carolina Maneuver Area, McNair staged a futher demonstration of his hypothesis that mobile antitank gun units, offensively employed, could defeat armor. GHQ pitted a largely infantry force with 4,320 more or less mobile antitank cannon against two armored divisions supported by a motorized infantry division, with 865 tanks and armored scout cars.[28] As in Louisiana, the decision went to the antitank units. These turned out to be the last maneuvers conducted in peacetime. As they began, Washington grew tense over portents of war with Japan, particularly a developing direct threat to MacArthur's force in the Philippines. Nonetheless, on 27 November General Marshall took time to fly down to Carolina to watch the conclusion of the maneuvers, and was once more favorably impressed with Patton's willingness to dare, and with the appearance and evident high spirits of the soldiers in his division. Later, after

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28 Blumenson, *America's First Battles 1776-1965*, op. cit., p. 234.

Pearl Harbor, one Senator questioned Marshall's judgement for leaving Washington on that day with war clouds plainly in sight. Marshall's rejoinder was that the trip had enabled him personally to confirm Patton's abilities, and to decide to promote him.[29]

When McNair delivered his critique of the Carolina Maneuvers on 30 November 1941, Japanese forces moving towards Pearl Harbor were 6 days from their objective. McNair's remarks characteristically included criticism of GHQ's provisions for the exercises, but added:[30]

> As I look back on the nation-wide series of maneuvers such as these here, and review the mass of comments of all kinds which have been made, certain features of the picture stand out, among them:
>
> The irrepressible cheerfulness, keen intelligence, and physical stamina of the American soldier. He is indeed an inspiration and a challenge to his leaders. . . .
>
> Imperfect discipline . . . [we need] the type which makes the individual subordinate himself to the advantage of his unit. . . .
>
> Disregard of the air threat. Columns moved closed up. . . . It is clear that a revision of the umpire manual must include putting vehicles out of action as a penalty. . . .
>
> Inadequate reconnaissance and security, although there is slow improvement.
>
> The small proportion of units which is brought to bear against the enemy, due to reluctance to leave the roads and column formation.
>
> The question is asked repeatedly, "Are these troops ready for war?" It is my judgment that, given complete equipment, they certainly could fight effectively. But it is to be added with emphasis that the losses would be unduly heavy, and the results of action against an adversary such as the German might not be all that could be desired. In spite of the remarkable progress of the year just past, there must be no idea in anyone's mind that further training is unnecessary.

McNair added that the maneuvers proved that troops could not be trained in 1 year, and called for hard work on mastering fundamentals. Marshall, in his remarks, was again more charitable than McNair, noting that he had observed significant improvements, especially considering the obstacles presented by inadequate equipment and insufficient time.

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29 Pogue, *Ordeal and Hope*, op. cit., p. 208.

30 Greenfield, K.R., Palmer, R.R., and Wiley, B.I., *The Organization of Ground Combat Troops*, United States Army in World War II: The Army Ground Forces, Washington, DC: Historical Division, Department of the Army, 1947, p. 46.

On Wednesday, 3 December 1941, the Secretary of War convened a conference of the Army's leadership to discuss the implications of the 1941 maneuvers. Both Lt. Gen. McNair and Brig. Gen. Clark of GHQ attended.[31] McNair opened the meeting by declaring progress in preparing senior officers and their staffs, and in providing, in GHQ's mobile antitank units, a reliable counter to armor threats. But he also expressed dismay over the poor state training of individuals and small units. The civilians present seemed more concerned than the generals over deficiencies in air-ground cooperation and antiaircraft defense, but no definite course of action was adopted to ameliorate these, or any other shortfall, for that matter. The presumption of the meeting was that the Army would enter a period of extensive, less time-pressured remedial training, in which there would be time to fix all the ills revealed by the exercises. The following Sunday the Japanese struck Hawaii, and blew away all such expectations.

4. The Army Shapes Up

With the declaration of war, plans to return National Guardsmen to reserve status, and for deliberate remedial training were discarded, and full mobilization got underway. The expected house-cleaning of officer ranks was given added impetus. Most of the 42 division, corps, and army commanders who took part in the GHQ maneuvers in Louisiana and Carolina were relieved or reassigned to new commands during 1942. Only 11 senior officers of the 42 went on to high command in battle. In place of the other 31, General Marshall advanced a group of younger officers, each of whom had turned in a promising performance that had caught his eye, or that of McNair.[32]

Despite McNair's belief that large-scale free maneuvers were inefficient for training small infantry units, they remained a feature of the Mobilization Training Program (MTP). Inded, they persisted in Army training methods until the recent past--the NATO *Autumn Forge* or *REFORGER* exercises were designed and umpired much like the GHQ maneuvers of 1941. In 1978, Lieutenant General Arthur S. Collins, Jr., U.S. Army (Ret.) published a book on Army training that attacked the professional proclivity for large field exercises, in which soldiers are used as training aids for generals:[33]

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31 Gabel, C.R., *The U.S. Army GHQ Maneuvers of 1941*, Washington, DC: Center of Military History, U.S. Army, 1991, pp. 170-172.

32 Ibid., p. 187. Three out of four of the division commanders were replaced.

33 Collins, A.S., Jr., *Common Sense Training*, San Rafael, CA: Presidio Press, 1978, pp. 8, 146-147.

> In my thirty-six years of service . . . I have repeatedly observed that in a maneuver, or field training exercise. . . . the higher the level of the participating units, the poorer the performance of the small units. Exceptions to this generalization are rare. Research indicates that this has been a consistent criticism of large-unit training since the Louisiana Maneuvers of 1941 . . . [he has seen comparable weaknesses in maneuvers of the 1960s and 1970s]. Over the years, observing exercises has led me to the following rule of thumb: The benefits from a field training exercise extend to two levels below the highest headquarters participating. In company-level exercises, platoons, squads, tank crews and gun sections derive the most benefit; a battalion exercise benefits the company and platoon level; a brigade exercise benefits the battalion and company level; and so on.

5. The California-Arizona Maneuver Area

In January 1942, Marshall put George Patton in command of I Armored Corps, the headquarters of which was transferred to Fort Benning. The following month the War Department announced an organizational trifurcation in which all its subordinate headquarters and units were grouped under Army Ground Forces [AGF, under McNair], Army Air Forces [AAF, under Arnold], or Army Service Forces [ASF, under Somervell]. Abolished were the Chiefs of Infantry, Artillery and Cavalry, and the Armored Force was subordinated to the AGF.

In the meantime, the war was going very badly for the Allies. The Japanese had delivered a series of crushing blows in the Pacific. German and Italian forces under Erwin Rommel had recaptured Bengasi, and were rolling across Cyrenaica toward the Suez Canal. British strategists expressed to counterparts in Washington concern over the prospect of great Axis pincer movements uniting in the Middle East: Rommel's *Afrika Korps*, Nazi columns out of the Russian Caucuses, Japanese divisions thrusting across India. If there was to be any substance to according strategic priority to meeting and defeating the Germans, American forces, Marshall decided, ought to prepare for war in the desert.

Accordingly, McNair ordered I Armored Corps to the arid wasteland of the southwestern United States with broad instructions to become proficient in warfare in such an environment. On March 4, 1942, Patton and several staff officers arrived at March Field to begin reconnaissance of a vast tract, about the size of the state of Pennsylvania,

which encompassed portions of southeast California, western Arizona, and southern Nevada (Fig. II-5).[34]



Figure II-5. Lt. Gen. McNair and Maj. Gen. Patton at the Desert Training Center, 1942

Within a few weeks, Patton's units were undertaking their first extensive exercises in the desert, and shortly thereafter Patton initiated a steady stream of correspondence on "lessons learned" from operations. No experiment was unworthy of his attention, no detail too small, if he thought it might improve readiness for battle. Patton was tireless in observing his units; he spent much time on a solitary hill between the Orocopia and Chuckwalla Mountains that the troops dubbed "The King's Throne," a point of vantage from which he could watch units moving about the plains below. Any slightest departure

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34 The area of interest was roughly bounded by Indio on the west, Needles on the north, Blythe on the east, and Yuma on the south. Patton set up his "base camp" some 20 miles east of Indio, with division cantonments at Desert Center, Needles, and Iron Mountain. Henly, D.C., "*The Land That God Forgot . .* ". Western American History Series, Fallon, NV, Lanhotan Valley Printing, 1990.

from march discipline, or any minor prospect for improving a formation or a tactic, would elicit a radio call from the "Throne." He also spent much time aloft in his light plane--he had flown his own Stimson *Voyageur* out from Georgia for the purpose--similarly observing and criticizing. He told his officers that "if you can work successfully here in this country, it will be no difficulty at all to kill the assorted sons of bitches you will meet in any other country." To McNair, now commanding Army Ground Forces, he sent a stream of observations and recommendations:[35]

> *To McNair, 5/2/42*: I may be overstepping the grounds of propriety but I feel the matter is so important that I would be disloyal if I failed to present my views. . . . To insure both administrative and tactical control of trucks and armored vehicles it is vitally necessary that they bear markings showing the company, regiment, and division to which they pertain. This should be uniform for the whole army. . . .
>
> *To McNair 5/20/42*: I am glad if my somewhat informal weekly reports are of interest. I have tried to make them short and readable but I fear the one I am sending this week will be a little long. However, since it is the first time to my knowledge that a fairly large group of armored vehicles were successfully commanded from the air by voice radio, the report may be of interest. . . .

Patton also kept in close touch with Lieutenant General Jacob L. Devers, head of the Armored Force, who was responsible for armor materiel, manuals, and training techniques. Patton wrote of a three-day exercise in which his entire corps had been deployed, culminating in a "battle" between two opposing forces. He urged Devers to look into installation of a compass in the tank, and to adopt a heavier gun for the light tank, and he endorsed Devers' campaign for a better medium tank. Patton sent him ten sheets of diagrams of armor formations he had evolved by trial and error, noting that they were not perfect, but "viewed from the air and from the ground, and I have done this on every occasion, they certainly present targets practically invulnerable to aviation."

For his part, Devers, an artilleryman, was engaged in reorganizing the armored division to exploit the lessons learned from the Louisiana and Carolina maneuvers of the previous year, and as the two divisions of I Armored Corps trained in the desert, they received new tables of organization and new manuals, ordaining a force structure and doctrine for flexible employment of mobility and firepower. The brigade was replaced by the Combat Command, a headquarters primarily concerned with intelligence and operations, designed to direct varying numbers of maneuver battalions, armor or armored

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35 Blumenson, M., *The Patton Papers 1940-1945*, pp. 58-76.

infantry, formed, as the mission dictated, into teams of tanks, infantry, and artillery forward observers. Additional armored infantry had been added to the division. Three separate self-propelled field artillery battalions operated under a division artillery headquarters. A division trains organization managed logistics and personnel.[36] Patton told Devers that the new manuals presenting the concepts for employing these were "really splendid."[37]

In July Patton wrote to his friend Major General Floyd Parks, serving on Marshall's staff, that "I am having my first night combat operation. I am looking forward to it with great interest and some trepidation, but I believe that the danger inherent in such operations is justified by the good that can come from their successful accomplishment."

Soon, Patton had reduced what he had learned to his own manual of sorts, entitled *Notes on Tactics and Techniques of Desert Warfare (Provisional), July 30, 1942*.[38] In it, Patton was quite didactic about air support operations, dispersed formations, and road marches. But command in battle, he asserted, was an art-form, and while he was willing to define battle's phases, he emphasized use of combined arms, and left the rest to the initiative and imagination of the commander on the ground. That commander should cope flexibly with the unexpected, relying on massive fires and maneuvers to bring fire to bear from the enemy's flank or, preferably, rear:

> Since marching is a science, it is susceptible of more or less dogmatic treatment. Battle, on the other hand, is an art. Hence, he who tries to define it closely is a fool. . . .
>
> Formation and material are of very secondary importance compared to discipline, the ability to shoot rapidly and accurately with the proper weapon at the proper target, and the irresistible desire to close with the enemy with the purpose of killing and destroying him. Throughout training, these things must be stressed above all others. . . .
>
> The force commander can exercise command from the air in a liaison plane by use of the two-way radio. He should remain in the plane until contact

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36 Blumenson, M., "Kasserine Pass, 30 January-22 February 1943." In *America's First Battles 1776-1965*, eds., Heller, C.E., and Stofft, W.A., Lawrence, KS: University Press of Kansas, 1986, pp. 234-235.

37 Blumenson, M., *The Patton Papers 1940-1945*, op. cit.

38 Patton, G.S., Jr., *The Desert Training Corps*, Province, C.M., ed., San Diego, CA: Patton Historical Society, 1990. This pamphlet takes its name from a *Cavalry Journal* article by Patton from the edition of September-October 1942, which is reproduced, plus his "Notes on Tactics and Techniques of Desert Warfare."

[with the enemy] is gained, after which one of his staff officers should be in the plane, and he himself on the ground to lead the attack. . . .

[Reconnaissance and advance guard units] acting as ordered by the higher commander always remembering that they must never lose a chance of hurting the enemy. Sitting on a tank watching the show is fatuous--killing wins wars. . . .

As the fight progresses, and dust clouds prevent observation, the reserve tank unit should move out to encircle the enemy and attack him from the rear. When is is in position to make this attack, it should signal the force commander so that a synchronized assault may be executed. . . .

[When attack aviation notifies it is ready] the fronts of our main assault and encircling force are outlined by clouds of specially colored smoke produced either by grenades or by artillery. This smoke gives the air a datum line as they are then able with safety to attack the narrow zone of the enemy front between the two lines of smoke. . . .

As soon as the air attack is complete, the final assault from the front and rear is ordered. In this assault the tanks move rapidly forward to close with the enemy, while the enveloping tanks attack him from the rear. The armored infantry, moving in their carriers, follow the tanks until they are forced to dismount by hostile fire, and then rushing forward mop up and secure the spoils of victory. I repeat that the foregoing description is a great generalization. For example, in the situations where the enemy is covered by a minefield or we have been unable to locate and destroy his guns the infantry will attack first supported by the fire of all guns--Tank, Artillery, Tank Destroyer, Dual-Purpose Anti-Aircraft, and by the Air Force.

[Patton forwarded his *Notes* . . . to AGF en route to another assignment: he had been detailed to prepare for the invasion of North Africa.]

The first large unit field exercises at the Desert Training Center took place in the fall of 1942, months after Patton's departure, and revealed that training managers had not exploited the advantages of the size of the area: exercises were scheduled so tightly that units started in close proximity, and reconnaissance, communications, and resupply operations were spatially unrealistic. Moreover, Patton's early "experiments" with water conservation were demonstrated to be physiologically unsound: Patton operated on the hypothesis that any soldier could be conditioned to limit his drinking to 1 quart of water per day, despite heat that drained his body of as much as 2-plus gallons of water per day. Later, working with the 77th Infantry Division, scientists demonstrated that a water ration based on allowing individuals to replace lost body fluid--depending on individual need, and exertion--led to significantly fewer cases of hospitalization for heat prostration. For instance, they demonstrated that soldiers could be trained to march up to 20 to 25 miles per day, noting that whatever each individual's tolerance might be, each additional quart of

water boosted a man's capability for walking another 5 miles.[39] In all, the desert environment stretched not only individuals and combat arms units, but also the logistical and communication services.

For this reason, AGF decided that the entire region should be structured like a theater of operations overseas, with two "opposing" corps-size forces, each provided its own communications zone (COMZ), complete with airfields, railhead, and road network. The COMZ concept had the advantage of providing realistic roles for ASF units in training integrated with that of the AGF, and challenged logistically higher echelon staffs on both sides. In 1943 Army Ground Forces redesignated the region the California-Arizona Maneuver Area [C-AMA], and formally extended it to include coastal California, and Arizona as far east as Phoenix. Into this "model theater of operations" AGF sent divisions that had satisfactorily passed AGF training tests at the end of unit training, and had participated in conventional maneuvers. The plan was that each such division would undertake 13 weeks of exercises in combined arms "under the closest possible resemblance to combat conditions." Here they were to acquire combat-like experience with command, control, communications, intelligence, and combat service support, and with close-support of maneuvering task forces by artillery and air impossible to simulate in the usual "large unit maneuvers."[40] At its peak, the C-AMA supported 190,000 troops in training in an elliptical area 350 miles west to east from Pomona, CA, to Phoenix, AZ, and 250 miles south to north from Yuma, AZ, to Boulder City, NV.

Twenty divisions trained in the surrogate theater of war in the C-AMA: these were the 3d, 4th, 5th, 6th, 7th, 9th, and 11th Armored Divisions, and the 6th, 7th, 8th, 33d, 77th, 79th, 80th, 81st, 85th, 90th, 93d, 95th, and 104th Infantry Divisions. None of these subsequently fought in a desert campaign; five of the infantry divisions served in the Pacific. The 11th Armored Division was activated in August 1942; the 104th Infantry Division was activated in September 1942. Closure of the C-AMA in spring 1944 denied the experience to divisions activated later.

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39 Lynch, J.S., Kennedy, J.W., Wooley, R.L., *Patton's Desert Training Center*, Fort Myer, VA, Council on America's Military Past, 1986, pp. 26-27. Other tests conducted by Patton concluded that sunglasses were convenient, but not necessary--although the experiment does not seem to have explored penalty to night vision after prolonged exposure to bright sunlight.

40 Palmer, R.R., Wiley, B.I., and Keast, W.R., *The Procurement and Training of Ground Combat Troops*. United States Army in World War II: The Army Ground Forces, Washington, DC: Historical Division, Department of the Army, 1948, pp. 450, 470-471. Moenk, J.R., *A History of Large-Scale Maneuvers in the United States, 1935-1964*, Fort Monroe, VA: U.S. Army Continental Army Command, 1969, pp. 82-83,103-104.

Not all commanders took full advantage of the C-AMA to train for battle. The 90th Infantry Division, for example, was redesignated in September 1942 the 90th Motorized Division (that is, issued enough trucks to transport the entire division) and utilized the C-AMA September to December 1943 mainly for intensive training in lengthy motor marches. One veteran has commented that meeting start point time and maintaining interval were definitive performances within the grasp of his division's command group--as Patton termed it, "science." Large-scale force-on-force maneuvers in that vast arena, or indeed any "how-to-fight" training, involved complexities and imponderables--according to Patton, "art"--that the leaders of the 90th eschewed.[41]

6. The Onset of Combat

Altogether too slowly for politicians and strategists, GHQ/AGF fashioned a force capable of fighting overseas. When U.S. Army divisions entered battle for the first time in World War II, many did not perform well. The Appendix, "The Acid Test: Battle," describes initial encounters with the Germans and the Japanese. Most observers blamed for the early mishaps not the Army's methods of preparing divisions for combat missions, but rather the leaders charged with executing the latter. But the Army's experiences of late 1942 and early 1943 still provide powerful lessons for any American concerned with raising and training divisions to fight future wars.

During 4 months, from November 1942 through February 1943, in the opening battles at Buna in the South Pacific and at Kasserine Pass in North Africa, of the 43,000 American soldiers who took part, 40 percent became casualties of one sort or another: nearly 1,000 were killed in action, 5,000 wounded, 3,000 missing in action, and 8,600 sick, for a total of 17,600.[42] The 32d Division, formerly of the Wisconsin National Guard, was so seriously depleted by its losses at Buna that it was held out of action for retraining and refitting for a year. Two battalions of the 168th Infantry, an Iowa National Guard regiment of the 34th Infantry Division, were taken prisoner by the Germans early in the Kasserine fighting, one of them under the (temporary) command of Lt. Col. John Waters of the 1st Armored Division, Patton's son-in-law. These were losses of a

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41 DePuy, W.E., *Changing An Army: An Oral History of General W.E. DePuy, USA Retired*, eds., Brownlee, R.L., and Mullen, W.J., Washington, DC: U.S. Military History Institute and U.S. Army Center of Military History, 1988, pp. 7-9. DePuy interview with the author, 20 April, 1991.

42 See Appendix.

magnitude that called into question the very assumptions for mobilization planning, as well as the adequacy of AGF training.

Properly, the first ameliorative measures were directed at leadership. In both battles, senior American field commanders had failed to provide for fundamentals: unit integrity and cohesion, unity of command, intelligence preparation of the battlefield, security, concentration of combat power, synchronization of the several arms and services. McNair's maneuvers could not have conveyed to the commanders concerned the bloody consequences.

There were other shortcomings evident at all levels, down to the individual soldier, but training overseas remedied these. Lieutenant General Eichelberger, whom MacArthur dispatched to take command at Buna, succeeded in turning around the deterioration of the 32d Division, and Lieutenant General Patton, placed in command in Tunisia after Kasserine, unified and energized II Corps, reaffirming the essentiality of vigorous leadership from the top. With the strong support of his theater commander, each ruthlessly relieved incompetent subordinate commanders, and shuffled staff officers. More importantly, Eichelberger and Patton shared the view that units in combat were units in training. Eichelberger used the advance on Buna as a context for collective training. Patton retrained the divisions of II Corps during its offensive to Bizerte--he averred that soldiers who could not be trained to wear personal equipment properly, to salute, or to observe other particulars of soldierly demeanor, could not be disciplined to move forward in battle. He exacted high standards of subordinates in all these respects, but he also emphasized battle skills: during the first lull in operations after his landing in Morocco, he had reinstituted collective training, observing after an inspection of the 2d Armored Division, that his old outfit had forgotten much he had taught it.[43] His guidance to II Corps was similarly aimed at restoring attention to fundamentals.

Major General Omar Bradley, reporting to McNair and Marshall on what he had observed in North Africa, found no fault with AGF doctrine pertaining to infantry or artillery, asked for more emphasis on mines, stressed that tank destroyers were a defensive weapon, criticized air-ground cooperation, and noted that he saw the influence of the AGF maneuvers in the case of some troops who had surrendered needlessly, as though an

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43 Blumenson, *The Patton Papers, 1940-1945*, op. cit., pp. 161, 176, 181, 185.

umpire had ruled them defeated.[44] Marshall's old friend, Major General Walton H. Walker, praised the artillery, deprecated air-ground cooperation, and declared that the infantry lacked aggressive junior leadership and often proper discipline. He termed the tank destroyer a misconception that had led to heavy casualties.[45]

The divisions who fought the initial battles did well in subsequent campaigns. When the 32d Division returned to action, its performance was markedly better than at Buna. The divisions involved at the Kasserine Pass were remanned, retrained, and refitted during the continuation of the Tunisian Campaign. In April 1943, Brigadier General Thomas Handy reported to General Marshall, after a visit to Tunisia, from the following notes:[46]

> We can feel sure of the Divs in line [1st, 9th, 34th Infantry and 1st Armored]--There had been some doubt as to 34th [Infantry] Div--But while I was there this Div took Hill 609 which was really the key point of the German position. . . .
>
> General opinion U.S. troops has changed most markedly since moved to North [of Tunisian front]--not much expected as terrain extremely difficult but they did [advance] and are advancing--The fact that [the British] 8th Army was stopped by same type of terrain has tended to raise very much the opinion of all concerned re our troops--

In March 1943, after Buna and Kasserine, the War Department authorized infantry units additional firepower: an added automatic rifle for the rifle squad and a cannon company at the infantry regiment. Production of small-caliber antitank and tank guns ceased, and 76- and 90-mm guns became standard. Expectations for tank destroyers were substantially reduced, e.g., mobilization objectives were cut from 222 battalions to 106. Conversely, tank, engineer, and artillery battalion authorizations were increased.

In July 1943 Army Ground Forces increased the length of all individual training from 13 to 17 weeks, and added emphasis on physical conditioning and personal hygiene, mine-laying and removal, patrolling, observing and reporting, and exercises in fire and movement with live ammunition. The unit training cycle for antiaircraft units was increased from 18 weeks to 22 weeks. Overseas, the theaters attempted to redress the difficulties

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44 Pogue, F.C., *George C. Marshall: Organizer of Victory*, New York: Viking, 1973, pp. 183-186. Marshall had selected Bradley to go to North Africa to join Patton as Eisenhower's "eyes and ears," pulling Bradley from command of the 28th Infantry Division, where he was undertaking much-needed reforms.

45 Ibid.

46 Weigley, *History of the United States Army*, op cit., pp. 475-476.

they had encountered in applying air power to the land battle, but few lasting improvements in air-ground cooperation were realized.

C. THE GHQ/AGF TRAINING SYSTEM

1. Principles and Pitfalls

Churchill's hyperbole, "creating mighty armies almost at the stroke of a wand," scarcely describes the arduous and slow work before and during World War II undertaken by Lieutenant General Lesley J. McNair, his GHQ/AGF commands, and their successors. Closer to the mark is Churchill's tribute to the Army's "prodigy of organization, an achievement which the soldiers of every other country will always study with admiration and envy."[47] Considering that virtually every aspect of McNair's program represented a new start in a conservative institution, the accomplishments of GHQ/AGF were impressive indeed. When the Army Ground Forces came into being in March 1942, there were on hand 36 divisions: 2 cavalry divisions, 11 infantry divisions of the old Regular Army, 18 federalized National Guard infantry divisions, and 5 new armored divisions. One of the cavalry divisions was eventually converted to infantry, and the other inactivated. AGF activated, filled, and trained an additional 54 combat divisions in 1942 and 1943 (Table II-1).[48]

Table II-1. Summary of Division Activations by Year

Year	Infantry	Armored	Airborne	Total
1942	27	9	2	38
1943	11	2	3	16
TOTAL	38	11	5	54

47 Ibid.

48 Tables are drawn from Palmer, R.R., Wiley, B.I., and Keast, W.R., *The Procurement and Training of Ground Combat Troops*, op. cit., pp. 489-493.

From 1942 to 1945, AGF prepared and moved to ports of embarkation, a total of 86 infantry, armored and airborne divisions (Table II- 2):[49]

Table II-2. Summary of Movements of Divisions Overseas by Year

Year	Infantry	Armored	Airborne	Total
1942	12	2	0	14
1943	12	2	2	16
1944	37	9	2	48
1945	4	3	1	8
TOTAL	65	16	5	86

a. McNair's Plan for "Methodical Training"

According to GHQ/AGF plans, 10 to 12 months would be required from activation to earliest readiness for shipment overseas into combat. Thirteen to 17 weeks were allocated for conducting individual training for the soldiers; 11 to 13 weeks for unit training through regimental level; and 11 to 14 weeks for combined arms training, to include at least one maneuver of one division opposing another. Overseas requirements permitting, divisions would also receive 8 to 10 weeks of "post-graduate" training for honing combat skills and practicing teamwork:[50]

McNair devised a comprehensive, standard scheme for raising and training divisions that was both innovative--unprecedented, to say the least--and eminently practical. AGF directives set forth 10 principles for that program.[51]

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49 Ibid. Figures for infantry divisions shipped include the 1st Cavalry Division, dismounted and shipped in June 1943 to the Pacific for employment as an infantry division. The 2d Cavalry Division was also shipped, but was inactivated after arrival in the Mediterranean Theater. Three other divisions were activated and trained overseas in the Pacific Theater. Hence, the total available during World War II for employment by overseas commanders was 86 + 3 = 89 divisions; of these, only two were not committed to battle: the 13th Airborne Division in France, and the 98th Infantry Division in Hawaii.

50 Greenfield, K.R., Palmer, R.R., and Wiley, B.I., *The Organization of Ground Combat Troops*, United States Army in World War II: The Army Ground Forces, Washington. DC: Historical Division, Department of the Army, 1947, pp. 54-55. McNair objected to requiring divisions to provide basic individual training to soldiers, preferring that Replacement Training Centers perform that task, but he was overruled. *The Procurement and Training of Ground Combat Troops*, op. cit., pp. 442-448.

51 The basic AGF directive was that of 19 October 1942, issued without terminal date, and designed to guide all future training, *The Procurement and Training of Ground Combat Troops*, pp. 444-455.

1. Manage training so that it progresses sequentially by phases from individual training, through unit training, to combined arms training, and culminates in large-unit field exercises.
2. Test training at the end of each phase, using a standard test administered by higher headquarters.
3. Emphasize fundamentals, and review frequently, when tests show unfavorable results.
4. Stress basic combat proficiency, not amphibious or other special operations.
5. Conduct free, opposed field exercises and maneuvers, with realistic umpiring.
6. Critique exercises and maneuvers immediately upon their conclusion.
7. Use unit schools instead of sending officers or soldiers away for instruction.
8. Maintain tactical unit integrity.
9. Hold commanders responsible for all that their unit does or fails to do in training.
10. Strive always for combat realism.

Possibly because McNair demanded that AGF adhere to his standards, and that each division pass its training tests, AGF took much longer than 12 months to prepare a division for dispatch to an overseas theater. Table II-3 displays the average training times in which AGF prepared divisions of various types for overseas shipment.

Table II-3. Average AGF Training Time Per Division

National Guard Infantry Divisions: avg. 29 months
18 divisions activated in 1940 and 1941
Armored Divisions: avg 26 months
30 months for 5 activated in 1940 and 1941
26 months for 9 activated in 1942
20 months for 2 activated in 1943
Infantry Divisions of Reservists and Draftees: avg. 22 months
23 months for 27 activated in 1942
19 months for 9 activated in 1943

Building a division is not like constructing a ship or an aircraft: a division is a complex team of teams, a set of concepts shared by more than 10,000 individuals. It takes time to assemble the people, and train each first for an individual job, then for a role in a

small team, and finally to teach the team to cooperate with other teams under conditions approximating the stress of combat. The divisions activated in 1942 and afterwards started this process from civilians with little conception of soldiering. AGF's apparent increased efficiency with the divisions activated in 1943 actually reflects the emergency of late 1944, when it became necessary to send reinforcements to Europe, cutting back on combined arms training, and foregoing maneuvers.

Training AGF divisions would have been less complicated except for the necessity for the divisions' conducting individual training. Prior to Pearl Harbor, the War Department had planned to conduct that training in Replacement Training Centers (RTC), under the Chiefs of Arms and Services. But at that time it had to give priority to construction of division cantonments and related training facilities, and construction for the RTC consistently lagged. Output from the RTC was never able to fill out the divisions already in training. Hence, divisions had to accept conscripts direct from reception centers, and to train them wholly within the division. Even so, the numbers were seldom enough; most divisions in 1940 and 1941 were chronically undermanned, which in itself impaired collective training.

After Pearl Harbor, accelerated draft induction and division activation schedules were adopted. There was no commensurate expansion of the Replacement Training Centers, so that all the divisions thereafter activated trained their own soldiers. Moreover, while the reorganization of 1942 subordinated the RTC to the AGF, the RTC remained sized to accommodate mobilization plans, not battle losses. The RTC capacity for Quartermaster soldiers was equal to that for Artillerymen; the Signal Corps had a larger capacity than the Armored Force; and the Medical Corps had a capacity half as large as the Infantry. Within the Infantry, numbers of replacements trained as riflemen, cooks, and clerks were determined by jobs in the Tables of Organization without regard for the fact that most casualties would occur among riflemen. Total RTC output never matched demand.

Beginning in 1943, the urgencies of combat forced Army Ground Forces to compromise AGF's training principles for divisions, and by 1944 the whole AGF mechanism began to break down. Four realities obtruded: personnel insufficiencies that induced perturbations in programmed divisional training, equipment and supply inadequacies, premature deployments of units overseas, and combat losses.

b. Divisions Forfeit for Fillers

Low Replacement Training Center production caused problems for divisions in their post-activation training cycle. Every attempt was made to bring divisions ordered overseas to full strength prior to their being shipped. The RTC output was unequal to filling divisions alerted for overseas movements, so, in finding fillers for an alerted division, the War Department had no recourse except to dragoon trained soldiers from other divisions still in unit training. Worse still were hasty drawdowns to fill combat losses. The partially-trained troops were replaced with inductees fresh from reception centers (who often arrived behind schedule, in driblets) or with "retreads," transfers previously trained for another specialty or job than the one they would be expected to fill--e.g., tank destroyer personnel from units disbanded after disenchantment with that weapon system. In a division so depleted and refilled, training could no longer progress per McNair's principles, and often retrogressed, as the division sought to cope with personnel in several different phases of training. Often unit integrity was sacrificed to training efficiency, and each stratum of trainees grouped in provisional units under committees of instructors. Training in combined arms teamwork was delayed or foreclosed altogether, and culminating tests of readiness for combat postponed.

There was a related problem: cadres for new divisions were drawn from those that had completed unit training, or were nearing completion, so that as a unit approached its combined arms training, it often lost a number of experienced officers and noncommissioned officers, the very personnel who would have been central to its field training with other arms and services. Moreover, as the numbers of activations multiplied, the experience level in cadres plummeted, so that training was often the case of "the blind leading the blind," a condemnation used both in 1941 by Major General McNair after inspecting unit training, and, in a recent interview, by a veteran of a division activated in 1942. The latter officer recalled that in his regiment there were only three officers with any previous active component experience.[52]

As the war progressed, the aggregate of withdrawals from divisions in training increased. From 14 AGF infantry divisions in training September-December 1943, 18,137 enlisted soldiers were withdrawn as overseas replacements, and 6,404 were withdrawn to fill alerted divisions, an average loss of about 12 percent.[53] In April-September 1944, 17

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52 General W.E. DePuy, USA (Ret.), interview with author 20 April 1991, referring to his experience with the 90th Infantry Division, an Organized Reserve division, during its AGF training 1942-1943.

53 *The Procurement and Training of Ground Combat Troops*, op. cit., pp. 471-482.

AGF infantry divisions--10 of them already depleted in the late 1943 drawdowns--were hit for 78,703 enlisted overseas replacements, an average loss of 30 percent. But combat losses overseas were heaviest among junior officers--among platoon leaders of infantry regiments fighting in France in 1944, casualties were often 40 percent or more per week. In the AGF, an acute shortage of junior officers developed as these key trainers were stripped from divisions in training and dispatched as individual replacements. The commander of the AGF's 94th Division reported in June 1944, that there was not a second lieutenant in his command who had been on duty with the division in maneuvers 7 months before. Overseas demands for medical officers, engineers, and chaplains also contributed to high turnover.

In early 1944, the situation became so serious that General McNair was impelled to provide guidance on the maximum "stripping" that a division could tolerate, and on the consequent necessity to add time for more training, that included this directive: "Where total time is insufficient, maneuvers will either be curtailed or omitted. Individual and small-unit training must not be slighted."[54] But by that time, the AGF unit training system was a shell. The official Army history offers this judgement:[55]

> While all the divisions turned out by the Army Ground Forces had a year or more in training, the younger divisional organizations were hardly more than loose frames in which successive installments of infantrymen were processed for service overseas as individual replacements. When they [the divisions] finally were sent overseas these divisions, far from being groups of individuals welded by a year's collaborative training into smoothly functioning teams, were to a regrettable extent crazy-quilt conglomerations hastily assembled from sundry sources, given only a minimum of training, and loaded on transports.

c. Stovepipes and Signboards

Pearl Harbor found the divisions of the United States Army ill-equipped: much of what they had was obsolete, and there was much they did not have that was central to their training. Of 36 divisions activated as of Decembe 1941, only one division and one antiaircraft regiment had wartime authorized equipment. By February 1942, eight divisions were trained and equipped, but battle loads of ammunition were available for only two. Training suffered: shortages of key weapons, ammunition, communications equipment, and transport made it difficult at best to teach soldiers how to fight or to maintain, or to

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54 Ibid., pp. 480-481.

55 Ibid., pp. 481-482.

enable a commander to learn how to use his unit. Makeshift simulations figured in maneuvers from 1939 through 1943--broomsticks for rifles, stovepipes for mortars, labeled trucks for tanks (Fig. II-6).



Figure II-6. First Army Soldiers With a Pine-Log "Heavy Machine Gun," Carolina Maneuvers, 1941

An AGF letter to the Commanding General ASF, dated 6 April 1943, reported shortages of equipment authorized for divisions in training: of amounts authorized, AGF had on hand only 30 percent of Browning Automatic Rifles (BAR), 46 percent of rifles and carbines, 48 percent of trucks, 53 percent of 81-mm mortars, 55 percent of 60-mm mortars, and 71 percent of 105-mm howitzers.[56] To spread available equipment equitably among units in training, the War Department General Staff had adopted a system assigning each division a Priority A, B, or C. Priority A, complete issue of authorized equipment, was usually reserved for a division that had been alerted for movement overseas. B and C units were those not scheduled for commitment to combat in the near future. Divisional units with a B priority received 50 percent of their authorizations; nondivisional B units somewhat less; C units received a still lower quota. Sometimes units received their A priority so briefly before their movement overseas that they never had a chance to train with their equipment (Fig. II-7).

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56 Kreidberg, *History of Military Mobilization*, op. cit., p. 680.

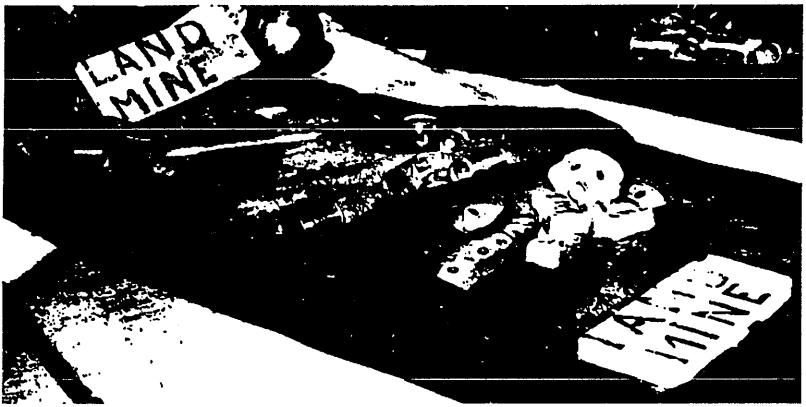


Figure II-7. Equipment Bundle for the 502d Parachute Bn., Carolina Maneuvers, 1941. Men and equipment--including weapons--had to be dropped from different aircraft. The "Land Mines" are blocks of wood; other blocks are labeled "TNT."

The 3rd and 9th Infantry Divisions, for example, trained for the first time with shoulder-fired antitank rockets on shipboard, en route to North Africa. In part, equipment shortfalls in U.S. units were occasioned by strategic decisions to fill certain Allied requirements ahead of U.S. Army needs. Thus, the 1st Armored Division fought in North Africa in late 1942 and early 1943 mainly with light, undergunned tanks; the British in the same theater, at the battle of El Alamein in October 1942, had enough new U.S. M4 Sherman medium tanks to equip an entire armored division.

d. Voracious Overseas Theaters

As the strategic tempo of the war accelerated, the demand for divisional reinforcements caused AGF to cut corners, especially divisional training planned for the concluding months of the cycle, when proficiency with combined arms was the principal objective. A few times, the decision to ship was taken with the assumption that the division would receive additional training in the overseas theater, but facilities and operational urgencies overseas usually abridged the promised supplement. The training of nondivisional units, especially combat service support units of the Army Service Forces, was even more severely impaired. As early as 1943, demands from overseas theaters forced ASF to begin to dispatch units overseas without any combined arms training

whatsoever. In the spring of 1944, to meet General Eisenhower's urgent calls for units and individual replacements to ready forces for OPERATION OVERLORD, the invasion of Europe, AGF cancelled scheduled maneuvers for Tennessee in March and Louisiana in April, and closed the California-Arizona Maneuver Area altogether. Concerning the latter decision, U.S. Army historians have judged that "discontinuance of this graduate school of combined training was a serious blow to the divisional program."[57]

By October 1942, the War Department had revised downward its plans for producing combat divisions from over 200 to a new goal, projecting 100 divisions by the end of 1943. In January 1943, in recognition of AGF's difficulties in meeting deployment schedules, it postponed into 1944 12 of the divisions scheduled for activation in 1943. By 1944, it was clear that activating 12 more divisions would not be feasible; every soldier would be needed to man the divisions on hand. The overall force structure for the war was 85 infantry, armored and airborne divisions activated and trained in the United States;[58] in addition, one cavalry division was converted to an infantry division for the Pacific theater, and three divisions were raised and trained there. Of the CONUS divisions, 22 divisions--one quarter--trained in the C-AMA. Of the remainder, most went through force-on-force maneuvers elsewhere. Yet 15 percent--13 in all--were sent overseas without any division-versus-division maneuvers. For those units, the consequent ". . . loss of training in staff functioning, logistics, maintenance, supply, teamwork with supporting units, and large-scale tactical operations under higher command was incalculable."[59] Seven of the infantry divisions that were shipped overseas in 1944 deployed without division-on-division maneuvers, and 10 others shipped that year completed the AGF training program including maneuvers, but promptly lost the troops they had maneuvered with to replacement drafts, and shipped with fillers, 40 percent or more of their strength joining them just prior to departure. Although in early 1944 AGF directed its commanders to arrange for at least 3 weeks field training for nondivisional units, "the dwindling number of divisions yet to be trained, together with the reduction in the scope of combined training which came with the closing of the California-Arizona Maneuver Area, made the prospects for participation of supporting units in realistic field exercises in 1944 unpromising in the extreme."[60]

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57 *The Procurement and Training of Ground Combat Troops*, op. cit., p. 470.

58 Weigley, op. cit., pp. 437-438.

59 *The Procurement and Training of Ground Combat Troops*, op. cit., p. 471.

60 Ibid., p. 537.

e. Maintaining Fighting Strength

Once battle losses took their toll in overseas divisions, AGF had to accord priority to producing individual replacements vice training divisions per McNair's original plan. Losses were heaviest, of course, in infantry regiments: on the average, 3 months of combat consumed 100 percent of a regiment's strength. On August 6, 1944, after 8 weeks of infantry combat in Normandy, the entire replacement pool for infantry units in Europe--trained infantrymen ashore in France available for assignment to depleted regiments--consisted of one solitary soldier.[61] By early 1945, 47 regiments in 19 divisions had suffered between 100 and 200 percent casualties. But, by foregoing further division activations, with ingenuity, and with some desperation, the War Department replaced those losses.[62]

To keep infantry divisions fighting, the AGF divisions in training paid the bill. The ultimate tragedy was that as combat intensified, and men were siphoned out of AGF, the quality of AGF unit training decreased, so that divisions produced late in the war, when combat was heaviest, were often quite unready for battle. One of the last AGF divisions shipped overseas was the 65th Infantry Division. Activated in August 1943, and shipped to Europe in December 1944 amid the crisis induced by the German offensive through the Ardennes, the 65th scarcely reflected a mature, combat-rectified training system. In mid-October 1944, the commanding general of the 65th Division sent a letter to Headquarters, Army Ground Forces, that expressed his personal training estimate in athletic metaphor:[63]

> The division that I gave basic training to is no longer here. . . . The last time I checked up on personnel turnover, this Division had furnished 10,000 men for other duties and had sent out enough officers to fill one and one-half divisions. . . . Personnel turnover prevented the making of a team out of this Division. Our situation is comparable to that of a football coach who has to turn over his team to other institutions a few weeks before the playing season starts. He wires for replacements. He gets two players from one college, three from another, and so on down the line. The pickings are so bad at this late date that he gets a miscellany of misfits and culls. He has to put backfield men in the line, and linemen in the backfield. He can't be expected to make a team under such circumstances.

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61 Marshall, S.L.A., *Men Against Fire*, op. cit., pp. 16-17.

62 *The Procurement and Training of Ground Combat Troops*, op. cit., pp. 438-439.

63 Ibid., pp. 487-488.

The Department of the Army history summarizes the training of the 65th Infantry Division as follows:[64]

> If the plans for building and training this division had been carried out as originally laid down by General McNair and his staff, the 65th when it moved overseas in 1945 might have been the most battleworthy of the long line of divisions produced by the Army Ground Forces. For into the planning of the organization, training, and equipment of this unit was poured the accumulated experience of four years' intensive effort. But, mainly because of personnel exigencies the control of which lay beyond the jurisdiction of the Army Ground Forces, the 65th was about the least ready for combat of all divisions trained in World War II. Its regiments had never worked with their supporting battalions of artillery in field exercises. The division commander had never maneuvered his command as a unit; in fact, the division had never been together, except for reviews and demonstrations, and its composition had changed greatly from one assembly to another. In the infantry regiments, only one man in four had been with the division for a year, and almost every fourth man had joined his unit within the past three months. The division was more of a hodge-podge than a team.

Of course, despite such miscarriages, the United States Army won its war against Axis ground forces. Available American manpower somehow supported manning not only the Army, but the U.S. Navy, the Marine Corps, and the Army Air Forces. The success of the Russians in keeping hundreds of divisions in combat against the Axis forces, and the troop contributions of the Commonwealth nations, compensated for the inability of the United States Army to commit to battle more than 87 divisions.

2. Equipment

Marshall was determined that the users of weapons, not the technicians who produced them, would establish the requirements for materiel, and looked to GHQ/Army Ground Forces to serve as the users' surrogate. The large-scale maneuvers staged by GHQ/AGF would insure that the headquarters remained abreast of user tactical concepts and equipment needs. But this approach could work only if the users, or their surrogate, were knowledgeable about technology, appreciative of the threats that users would face in battle, and keenly attuned to the dynamics of battle itself. In the event, GHQ/AGF proved deficient in all three respects.

For example, it is difficult to understand why the Army persisted with low energy means for piercing armor in the face of evidence that the Germans were opting for ever

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64 Ibid.

heavier armor. The United States Army adhered to cannon with a bore of less than one and one-half inches for a long time after European armies had moved to 3 inches or more. American factories were just tooling up to produce the 37-mm cannon when main battle tanks on both sides during the Battle of France, 1940, were equipped with 75-mm or larger guns. When the U.S. Army landed in France, its Main Battle Tank, the Sherman M-4, mounted a short-barrelled, low-velocity 75-mm, yet had to contend with German tanks equipped with long-barrelled, high-velocity 75-mm and 88-mm cannon. Even when the Army's Ordnance Corps persuaded AGF to adopt the shoulder-fired, antitank rocket--the Bazooka--AGF standardized a 2.75-inch design inadequate for piercing the frontal armor of already-fielded German tanks, a fact that led American troops to prize captured *Panzerfaust* launchers and rockets, a robust weapon that could do the job.

McNair's concept of mobile, offensive tank destroyers failed, *inter alia*, because the "destroyers" lacked truly superior firepower and because the Army never found a satisfactory carriage for the guns at hand. No crew of a lightly armored vehicle, no matter how agile, was likely to pursue and engage a German tank armed with a gun that could outrange theirs. And if it were open-topped as well, and the crew therefore vulnerable to German artillery and small-arms fire, they had additional reasons for tactical caution, rather than the aggressive "seek, strike, destroy" behavior that McNair espoused.

Still, even if given items of equipment adopted by AGF were inferior, they were projected onto the battlefield in large numbers, and usually proved easy to man and to maintain. In most respects, it was the *quantity* of the materiel procured under the aegis of the AGF that won the war. American land forces were liberally supplied, and even if a key item of ordnance, such as a tank, proved inferior to an enemy tank, sheer numbers on our side overwhelmed the opposition. Shortcomings in *quality* of materiel were dealt with by ingenious commanders and troops in the field, who devised tactical work-arounds for deficient equipment--for instance, flank or rear attack of German heavy tanks.

3. Force Design

In 1971, Lieutenant General W.E. DePuy, in a lecture at Fort Benning, took issue with the standard formulation of the mission of infantry pointing out that in World War II, per his recollection, what an infantry company really accomplished on any given day was not to "close with and destroy the enemy," but rather to move its artillery forward observer

to the next hill.[65] His views were not well received by his audience, but he was accurately reflecting the fact that the most important success of the U.S. Army in World War II must be attributed to its artillery ordnance and technique. "I do not have to tell you who won the war," General George S. Patton, Jr., said, "You know our artillery did." And George Marshall wrote after the war that:[66]

> We believe that our use of massed heavy artillery fire was far more effective than the German techniques and clearly outclassed the Japanese. Though our heavy artillery from the 105-mm up was generally matched by the Germans, our method of employment of these weapons has been one of the decisive factors of our ground campaigns throughout the world.

McNair, the artilleryman, used his predilections for pooling, centralization, and multiple-tasking to great good advantage in fashioning the field artillery. He had no such success with tank destroyers, or for that matter, with tanks themselves. The fundamental problem was simply that McNair, and every other leader of consequence in the United States Army of World War II, accepted as a matter of faith that American forces should be designed and trained for offensive action, a "war of movement," and when presented with a choice between fire power and mobility, invariably opted for mobility. Throughout World War II, American armor was agile, but under-gunned and under-protected compared with German armor. In battle, more powerful guns and tougher armor would have been useful, especially on the defense, or when maneuver was constrained by terrain or enemy action, and firepower and shock action had to be used to restore ability to maneuver tactically and operationally. Fortunately, American field commanders were provided with tanks and tank destroyers in such numbers that they were eventually able to prevail.[67]

General Marshall thought that large stateside maneuvers were the way to determine whether the Army's combatant units were properly organized and trained to fight and win. Lesley J. McNair shared his conviction, and pursued therein lean, mobile, and effective infantry divisions. Like Marshall, McNair had been an early advocate for the "triangular division"; he had been, indeed, the director of field tests under the 2d Division in 1937 that

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65 DePuy, W.E., "Applied Techniques--the Forgotten Tactic," Lecture to the Advanced Classes of the Infantry School, and to members of the Board for Dynamic Training, October 27, 1971. MS graphics and notes.

66 Weigley, op. cit., p. 474.

67 Trevor Dupuy has commented that "when the Germans had local superiority in numbers, as well as quality, they invariably won." Dupuy has documented the comparative overall effectiveness of German divisions. Dupuy, T.N., *A Genius for War: The German Army and General Staff, 1807-1945*, London: MacDonald and Jane's, 1977, pp. 3-5, 292-294, 305-306.

had led to the design for a three-regiment infantry division. The same tests had addressed antitank defense, and each of the infantry regiments proposed for the triangular division included an eight-gun antitank company. In 1939, McNair, as Commandant at Leavenworth, approved a manual entitled *Antimechanized Defense* that also postulated a motorized divisional antitank battalion, and called for countering armored threats by a mobile defense in depth, with the divisional antitank battalion concentrated so that it could move to meet threats. McNair thus created a classic disconnect, often repeated as the Army has since been modernized: doctrine had outstripped the means to implement it in the field.

McNair staunchly advocated, as a central principle of force design, that authorizations for any unit should include only that equipment it would require most of the time:[68]

> The division or other unit should be provided organically only with those means which it needs practically always. Peak loads, and unusual and infrequent demands obviously should be met from a pool--ordinarily in the army or separate corps.

When Marshall put McNair at GHQ, he charged him to resolve the four main questions concerning antitank defenses: (1) should antitank means be issued to the division and subordinate units per the Leavenworth manual? or (2) should antitank means be pooled at corps and army? and (3) what should those antitank means be? and (4) should those means belong to the artillery or to the infantry?

Per Marshall's guidance, McNair looked to large-scale maneuvers for answers. But maneuvers, as the name suggests, dealt mainly with movements, and were probably better at supporting gross estimates of force design than fine-grain analyses of weapon system effectiveness. GHQ maneuvers in 1940 shed little light on the antitank issues. In those exercises antitank gun batteries (often simulated) had been issued to the artillery, and not surprisingly, these moved when and where the artillery moved, to protect artillery positions. In the fall of 1940, GHQ authorized the formation of antitank cannon companies in each infantry regiment, which, together with the division artillery assets, raised the triangular division complement to 68 antitank guns. A War Department memorandum recommended using minimum numbers of these forward, and holding most grouped in

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68 Greenfield, K.R., Palmer, R.R., and Wiley, B.I., *The Organization of Ground Combat Troops*, United States Army in World War II: The Army Ground Forces, Washington, DC: Historical Division, Department of the Army, 1947, pp. 316-317.

mobile reserve. The version of FM 100-5, *Field Service Regulations*, published in early 1941 generalized this concept to echeloned defense:[69]

> Employment of antitank guns is based on a minimum number of guns in position initially to cover obstacles and as a first echelon of defense, and a maximum numbers of guns as a mobile reserve. Based on information of hostile mechanized forces, reserve guns are moved rapidly to previously reconnoitered locations and so disposed in battle as to permit timely and powerful reinforcement of areas threatened by hostile mechanized attack.

FM 100-5 notwithstanding, controversy continued over whether antitank guns belonged to the artillery along with other cannon, to the infantry who would be their principal beneficiary, or to the new armored force, as a defensive counterpart to the tank. General Marshall's patience soon ran out. Acting on the precedent he had set with squabbles over cavalry versus mechanized forces, when he had set up the Armored Force, he proposed to the General Staff that there be one more quasi-arm for antitank guns.

On 24 June 1941, the War Department ordered the activation of an antitank battalion in each division, in time for these to participate in the upcoming maneuvers. There was no standard armament; indeed, many of the units were equipped with simulators, typically small caliber guns mounted on light trucks. On 8 August 1941 McNair directed Third Army to ready for the Louisiana Maneuvers three GHQ antitank groups of three antitank battalions each. These were to be equipped with 37-mm and 75-mm guns withdrawn from artillery units, and were to be trained for an offensive role: they were to move to counter enemy armor by massed direct fires (Fig. II-8).

The maneuvers proved contentious. McNair's umpiring manual raised hackles among tank and antitank gun enthusiasts alike: (1) it ascribed to .50-caliber and 37-mm projectiles entirely unrealistic armor-penetrating capabilities; and (2) it assumed that tanks could not pinpoint guns well enough to engage them, and therefore prescribed that the only way a tank could "destroy" an antitank gun was by "overrunning" it, that is, by assaulting it frontally.

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69 Gabel, *Seek, Strike and Destroy*, op. cit., p. 10.



Figure II-8. Umpire Signals "Halt In Place" With Flag (Right) While 75-mm Gun Crew Engages Advancing Tank, Louisiana Maneuvers, 1941

There were disagreements on both sides:[70]

> The antitank advocates objected to the rule under which any and all infantry troops within 100 yards of a hostile tank were to be considered neutralized. . . .
>
> Armor advocates had even better reason to complain. In a fair fight between tank units, losses were to be inversely proportional to the number of tanks involved--20 Red tanks fighting 30 Blue Tanks would lose 3 tanks to Blue's 2. But when fired on by antitank guns, armored units could lose up to 1 tank per gun per minute. The tanks, on the other hand, could not knock out antitank guns with gunfire at all, but only by charging and overrunning them. . . .

McNair, in his own critique of the Louisiana Maneuver of 1941, stated that "an outstanding feature of the maneuver was the success attained in antitank defense, due primarily to guns. While terrain hampered armored operations, it seems clear that the mobile antitank gun defense now being developed gives promise of marked success. . . . [I]t is probable that additional antitank battalions--and perhaps larger units--will be formed."[71]

In retrospect, what seems clear is that McNair was deluded: the records of the maneuver show that of the three GHQ antitank groups, only one engaged in a "battle," and

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70 Ibid., pp. 14-15. Gabel, C.R., *The U.S. Army GHQ Maneuvers of 1941*, Washington, DC: Center of Military History, U.S. Army, 1991, pp. 48-49.

71 Ibid., p. 89.

most of the tanks "killed" by antitank guns during the maneuver were credited not to weapons from the presumably aggressive centralized AGF units, but to those parcelled out to regiments or divisions for passive defensive roles (Fig. II-9).

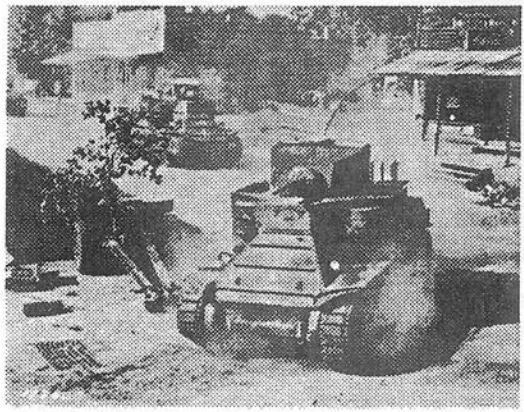


Figure II-9. M-2 Medium Tanks of 1st Armored Division Roll Past a Destroyed 75-mm Gun, Louisiana Maneuvers, 1941

In the Carolina maneuvers, these misperceptions persisted. IV Corps, with three infantry and two armored divisions, was pitted against First Army, with three corps, eight infantry divisions, the three regimental-sized GHQ Antitank Groups, and three similar groups it had organized on its own. Among the latter was Tank Attacker-1 (TA-1), organized around the 93d Tank Destroyer Battalion, with the prototype weapon system for the new "Seek, Strike, Destroy" arm: a 75-mm cannon mounted on a half-track (Fig. II-10).

On 20 November, TA-1 surrounded Headquarters, 1st Armored Division, and that division's 69th Tank Regiment near Albemarle, North Carolina. TA-1 positioned guns to cover all possible routes of escape, and after futile and costly attempts by the 69th's tanks to "overrun" these, TA-1 sent its self-propelled guns charging into the middle of the division's command post, coming within a hair of capturing the division commander.

Observers and umpires of the Carolina Maneuvers, while praising the aggressiveness of the commander of TA-1, pointed out that higher unit commanders seemed to have no idea of how to use such an asset, and ascribed the success of the Antitank Groups to poor employment of armor, and insufficient infantry in the armored divisions. Major General Jacob L. Devers, commanding the Armored Force, took the latter

finding to heart, and authorized another battalion of armored infantry for his divisions. But he refused to believe that the Antitank Groups had scored a victory, saying "We were licked by a set of umpire rules."[72]



Figure II-10. Tank Destroyer of Company B, 93d TD Bn., Deployed Against the 69th Armored Regiment, Carolina Maneuvers, 20 November 1941

Devers might have added that he had been licked by his boss, Lt. Gen. L.J. McNair, who since 1936 had been a proponent for cannon as the counter for tanks. Since 1936, he had been arguing that the Army should field a "tank buster."[73]

> It doesn't take a tank to knock out a tank, it takes a gun. Why spend all the money and effort on other tanks? We must have the tanks, yes. But we can smash the enemy tank more effectively and economically by moving guns

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72 Gabel, *Seek, Strike and Destroy*, op. cit., p. 17.

73 Whitaker, J.T., *These are the Generals--McNair*, op. cit., p. 13.

> speedily--guns that don't need the tank's armor because they can shoot further and hit harder than the guns in the tanks.

In 1943, asked to explain Soviet tenacity in the face of the Nazi onslaught, McNair replied: "Guns. The Soviets beat the tank with fire power, and fire power is just an eight-dollar term for guns." McNair knew that the U.S. Army needed not simply firepower, but mobile firepower.

On 27 November 1941 the War Department directed the activation of 53 GHQ tank destroyer battalions--the name chosen to connote their offensive mission. On 3 December a second War Department directive detached all existing antitank battalions from their parent arms, redesignated them tank destroyer units, and assigned them to GHQ. McNair had succeeded--per Marshall's directions--in setting up a new combat arm, based on doctrine neither founded in the capabilities of existing materiel nor properly validated in field experiments, for such empirical trials of the tank-destroyer concept as McNair had devised were well biased against tanks. McNair saw tank destroyers as the cost-effective arm for tactical ambush and riposte:[74]

> Since the tank must advance, the tank destroyer need only maneuver for a favorable position, conceal itself thoroughly, and ambush the tank. It is correct to think of the tank destroyer acting offensively, in that it does not sit passively on the chance that a tank may come its way, but on the contrary seeks out the tank and places itself where it can attack the tank effectively. However, the tank destroyer would be foolish to act offensively in the same manner as the tank, for such tactics would place the destroyer at a disadvantage, and would sacrifice the advantages which the destroyer has by the very nature of things. . . .
>
> The counterattack long has been termed the soul of the defense. Decisive action against a tank attack calls for a counterattack in the same general manner as against the older forms of attack. A counter-attack, of course, may be delivered by other tanks, but the process is costly. There is no reason why antitank guns, supported by infantry, cannot attack tanks just as infantry, supported by artillery has attacked infantry in the past. Certainly it is poor economy to use a $35,000 medium tank to destroy another tank when the job can be done by a gun costing a fraction as much. . . .

Whatever they cost, the under-gunned and under-protected American tank destroyers did not perform well in combat. In early 1943 Lieutenant General Devers toured the Tunisian battlefields, and filed a report to the War Department dated 9 February--before all the returns were in from the Battle of Kasserine Pass--stating that "the tank destroyer

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74 *Infantry for Battle in Europe, 1978*, Bad Kreuznach, Germany: Headquarters, 8th Infantry Division (Mechanized), U.S. Army Europe, 15 February 1978, p. 10.

arm is not a practical concept on the battlefield." Events in the European Theater thereafter proved Devers right, and before the end of the war, AGF was emphasizing the use of tank destroyers for indirect fire as supplemental artillery. During the fighting by VIII Corps in Normandy, 87 percent of the ammunition expended by Tank Destroyer units was for indirect fire missions. Subsequently, even as more heavily armed and better protected tank destroyers were fielded, their utilization as supplemental artillery became commonplace.[75] Twenty-six tank destroyer battalions were inactivated by AGF between 1 January 1944 and V-E Day.[76] The European Theater General Board that met after the end of the war reviewed the records of tank destroyer battalions during the campaigns in Africa, Italy, France, and Germany, and, while endorsing a high-velocity, direct-fire gun for support of infantry, recommended that the Army drop the concept of tank destroyer units. Orders directing the disestablishment of the Tank Destroyer Center, and the inactivation of the last tank destroyer battalions, were signed in 1945 by Lesley J. McNair's successor as commander of the Army Ground Forces, General Jacob L. Devers.

The American doctrine for tank destroyers--stemming from Marshall's decision to make them an independent arm, and McNair's concept of their rushing forward from positions echeloned back on the battlefield to ambush enemy armor by fire--was the antithesis of that of the Germans, who pushed their antitank guns as far forward as they could.

While the U.S. Army was engaged in the GHQ maneuvers of 1941, the largest armor battles in history were underway in North Africa. In mid-November, even as the Carolina Maneuvers reached their climax at Albemarle with TA-1's charge into the command post of the 1st Armored Division, quite different tactics were being employed by General Rommel's force to meet the British counteroffensive called CRUSADER. The British commander, General Cunningham, had formed his Eighth Army to control two corps, one almost wholly infantry, the other armor, and ordered the latter to sweep around the German southern flank, to strike the German armor in reserve, and to engage it decisively. Cunningham disposed of some 900 tanks, 20 percent of which were American M-3 Stuarts, lightly armed and armored, but agile. The Germans had less than one-third as many tanks, of which 96 were the pre-war model *PzKw II*. Nonetheless, the battle, once joined, quickly turned against the British; in 3 weeks, Rommel had seized the operational

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75 Gabel, *Seek, Strike and Destroy*, op. cit., pp. 57-58.

76 *The Procurement and Training of Ground Combat Troops*, op. cit., pp. 542, 628.

initiative, and destroyed nearly half of the British armor. General Gott, commander of the British 7th Armoured Division for CRUSADER, reported in frustration that:[77]

> The German will not commit himself to tank versus tank battle as such. In every phase of battle he coordinates the action of his antitank guns, Field Artillery and Infantry with his tanks and he will not be drawn from this policy.

As a German observer put it:[78]

> A German panzer division was a highly flexible formation of all arms, which always relied on artillery in attack and defense. In contrast, the British regarded the antitank gun as a defensive weapon, and they failed to make adequate use of their powerful field artillery, which should have been taught to eliminate our antitank guns.

John Strawson, a tank-turret veteran of CRUSADER, wrote this of the battle:[79]

> In total number of tanks which each side could muster, the British had a superiority. But it was not numbers which necessarily counted. What did count was their quality, tactical handling, and standard of crew training. . . . [Germans enjoyed some advantage in superior gun-armor combinations on their newer tanks] But in addition to this, their tactical skill in coordinating the fire power of tanks and antitank guns was not simply greater than the British. Whereas it was fundamental to their method of fighting, the British virtually relied on their tanks alone. . . . [I]t is necessary to reiterate here that close and permanent integration of all arms together with concentration of armor are fundamental requirements for success in desert fighting. In Cunningham's broad plan the first of these had given way to the stronger claims of the other. . . .

Strawson characterized British tactical disposition of tanks and antitank guns as "amateurism," and attributed Rommel's repeated triumphs in 1941 and early 1942 in part to:[80]

> Serious misunderstanding by the British [about] the way the Germans handled their armoured formations. Rommel's panzer groups were quite clear that whereas tanks dealt primarily with the enemy's infantry and soft vehicles, the destruction of tanks was mainly the job of weapons designed for just this purpose, antitank guns. This theory was put into practice, and the German 88-mm and 50-mm antitank guns were both powerful in themselves and skillfully manned, but not at the expense of the further fundamental feature of German tactical doctrine--close and permanent

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77 Barnett, C., *The Desert Generals*, New York: Ballentine Books, 1960, p. 105.

78 Ibid.

79 Strawson, J., *The Battle for North Africa*, New York: Ace Books, 1969, pp. 81-82.

80 Ibid., p. 74.

> integration of tank, gun and infantry teams. In this requisite of desert, or any other, fighting, the British simply did not match the opponents. . . .

It scarcely need be added that McNair's forces were even less of a match for the Germans, and learning the hard lessons of desert battle against Germans had to await the Battle of Kasserine Pass, in late 1942-early 1943 (see Appendix). After he left Africa, Field Marshall Erwin Rommel wrote that:[81]

> The tanks are the core of the mechanized army. Everything turns on them, and other formations are mere auxiliaries. The war . . . must be, therefore, waged as far forward as possible by the antitank units. One's own tanks should only be used to deal the final blow. . . .

Rommel held that "the side with the bigger gun has the longer arm and can be first to engage the enemy."

The U.S. Army, disappointed with its tank destroyers, diminished their numbers (and eventually eliminated them), while at the same time the Germans made broader and broader recourse to antitank guns. Moreover, the American tank destroyer remained puny compared with its German counterpart, the *Jagdpanzer*, or tank-hunter--typically a heavy tank chassis on which was mounted a very large-caliber, high-velocity gun. Nor did successive models of American towed antitank guns ever measure up to the renowned German 88, a dual-role antitank/antiaircraft gun, in use throughout the war. Thrown on the strategic and operational defensive, the Germans emphasized the *Jagdpanzer* even as the Americans de-emphasized the tank destroyer (Table II-4):[82]

Table II-4. German Production of Armored Vehicles

Type	1941	1942	1943	1944	Total
Panzer	3,256	4,198	5,996	8,328	21,778
Jagdpanzer	548	824	3,411	9,368	14,151

As a measure of the quantity versus quality issue with which the Germans had to contend, during the same period the United States produced 88,410 tanks, and 27,082 self-propelled guns and howitzers--fielding a 3:1 superiority in numbers of armored vehicles on the battlefield, albeit an inferiority in size of gun and armor protection.[83]

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81 *Infantry for Battle in Europe, 1978*, op. cit., p. 8.

82 Ibid., p. 7. Data are from the U.S. Strategic Bombing Survey.

83 *The Army Almanac*, op. cit., p. 217.

The U.S. Army was misled in designing its antitank forces in World War II precisely because McNair's maneuver control mechanisms could not realistically simulate engagements between direct-fire weapons such as tanks and antitank guns. A similar deficiency with respect to simulating dismounted combat obscured flaws in the centerpiece of McNair's force-design undertakings, the infantry division. It is true that the triangular divisions proved to be flexible, and strategically and tactically mobile. But it is also true that during the war in Europe infantry divisions habitually fought accompanied by tanks and/or tank destroyer units, attachments so prolonged as to vitiate the putative advantages of centralized control, or pooling, and to raise seriously the question of whether it would have been better to assign them permanently to the division for cohesive administration, maintenance and, above all, integrated training in combined arms tactics.

Some argued that the U.S. Army should have fielded more armored divisions. After the invasion of Europe, infantry regiments bore an overwhelmingly disproportionate share of casualties. On 20 November 1945, within a month of his fatal automobile accident, General George Patton presided over a meeting of The General Board, United States Forces, European Theater, 44 officers convened to consider the future design of the division. A huge chart of a new divisional organization was hung before the Board. With his usual instinct for the jugular, Patton opened the meeting by pointing out that criteria by which to judge the current infantry division ought to include its vulnerabilities, as well as its effectiveness:[84]

> The infantry component of the division, which is 65.9% of the total personnel, inflicts on the enemy by means of small arms, automatic weapons, mortars, and hand grenades approximately 37% of [enemy] casualties. In order to inflict 37% of [enemy] casualties the infantry sustains 92% of the total [friendly] casualties of the division. The artillery, which comprises 15% of the division, inflicts on the enemy 42% of the total [enemy] casualties for which it pays but 2%.

Patton then pointed out that: (1) the armored division accomplished its missions with far fewer infantrymen (less than one-third the division's strength), and friendly casualties were more equitably shared among infantry (65 percent), armor (25 percent), and

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84 Ney, V., *Evolution of the U.S. Army Division 1939-1968*, CORG-M-365, Fort Belvoir, VA: Technical Operations, Inc., Combat Operations Research Group, for U.S. Army Combat Developments Command, January 1969. The General Board proceedings are reproduced as Appendix D, p. 112.

artillery (4.7 percent)--he gave no figures for enemy casualties inflicted by armored divisions; (2) mechanized forces were preferable to others because:[85]

> Americans as a race are the most adept in the use of machinery of any people on earth and they are the most adept in the construction of machines on a mass production basis. This suggests to my mind the fact that we should exploit to the utmost our ability in the use of mechanical aids both on the ground and in the air.

Patton held that there ought to be very little difference between the design of an infantry division and the design of an armored division, except that in the former, "the purpose of supporting weapons--primarily tanks--is to get the infantry forward. In an armored division, the purpose of the infantry is to break the tanks loose."[86]

4. The Nub of the Problem: Infantry Readiness

a. Infantry Training

Part of the ferment of Marshall's Benning in the late 20s and early 30s had been a search for a weapon that would improve the firepower of each infantryman, yet preserve his mobility. Toward the end of Marshall's tenure at the Infantry School, the eight man rifle squad of World War I was modified by issuing an improved, but heavier version of the Browning Automatic Rifle, adopted not to emulate the trend in Europe toward more automatic weapons in the squad, but as a stop-gap measure pending issue of the Garand semi-automatic rifle, designated the M-1, that had been selected as the basic infantry weapon.[87]

> American emphasis remained in the individual doughboy's shoulder arm. Accordingly, in the effort to substitute firepower for manpower there was a continuous search for an efficient self-loading rifle. Experiments at the Infantry Board soon made it clear that a semi-automatic rifle could increase the infantryman's rate of fire from ten or fifteen aimed shots to twenty or thirty per minute. What is more, the rounds could be better aimed because the marksman did not have to unsettle his aim to operate a bolt.

But modernization was delayed by Congressional reluctance to arm the nation. In 1934 there were but eighty M-1s on hand, and by late 1938 M-1s were replacing the Springfield M1903 rifle at the rate of only 150 per week. In December 1938, the Army

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85 Ibid.

86 Ibid., p. 118.

87 Mahon, J.K., and Danysh, R., *Infantry*, Army Lineage Series, Part I: Regular Army, Washington, DC: Office of the Chief of Military History, 1972, p. 52.

adopted a Table of Organization and Equipment (TO&E) for the rifle squad that eliminated the BAR in those squads equipped with the M-1, but authorized one BAR and one pistol in lieu of one rifle in squads with the older rifle--the pistol for the Assistant AR (Ammo Bearer).[88] When mobilization got underway in 1940, most rifle squads still had only the M1903 rifle and the BAR. The new M-1 rifle did not wholly supplant the M1903 until well after Pearl Harbor.

At the core of the Army's design of the infantry squad were possibly romantic notions about the marksmanship and combativeness of the American soldier. One authority described the premises in 1936:[89]

> The rifle squad comprises eight men at most, grouped round an automatic rifle and led by a corporal. One man is designated to replace the squad leader in case of casualty. Two men act as scouts, one as assistant automatic rifleman and one as rifle grenadier. The squad leader lives with his squad at all times and is responsible that they are fed, equipped, and trained; in combat, he sees that they fight. . . .
>
> The squad leader carries on combat at a distance through men specialized in the flat-trajectory fire of the rifle and automatic rifle, and the shorter-range, curved trajectory fire of the hand grenade and rifle grenade. He leads hand-to-hand combat with bayonet, butt, knife, foot and fist.

Before World War II, the Chief of Infantry, guardian of this lore of sharp-eyed, pugnacious doughboys, annually sponsored an annual competition among all the rifle squads of the Army, designed to set standards, to hone skills, and to heighten ardor, that tested the squad's ability to attack by fire and movement an enemy force represented by pop-up silhouette targets. Points were won for "hits" on the targets, and all squads who achieved a pre-established high score won the presumably-coveted designation of "Chief of Infantry Combat Team."[90]

McNair, while evaluating the design of the triangular division, had caused a thorough review of infantry units, a chief consumer of manpower. He noted that the American infantry squad, could be traced back to 1867 and Emory Upton's prescriptions for open-order tactics based on fire and movement by two ranks of four men each, and that aside from the weapons, little had changed. It was the Chief of Infantry who convinced McNair to increase rifle squad strength to 12 in October 1940, citing wartime experience in

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88 Ney, *Organization and Equipment of the Infantry Rifle Squad*, op. cit., p. 90.

89 Wheeler, Col. W.R., *The Infantry Battalion in War*, Washington: The Infantry Journal, 1936, pp. 1-2. Quoted in Ney, *Organization and Equipment of the Infantry Rifle Squad*, op. cit., pp. 39-40.

90 Ney, ibid., pp. 40-41.

1918 that demonstrated that a large squad was needed to absorb casualties and continue in action. (The Chief of Infantry was not asked to adduce evidence of enemy casualties occasioned by bayonet, butt, or knife, let alone damage inflicted by foot and fist.) McNair also approved pooling of heavier weapons at the platoon echelon, through formation of an Automatic Rifle Squad, and at the company, through addition of a weapons platoon equipped with light machine guns and mortars.[91]

McNair was deeply troubled that infantry units participating in the GHQ maneuvers of 1941 gave little evidence that they understood or cared about what they had been taught during the Mobilization Training Program. What they had been taught was that supporting infantry close combat was the ultimate purpose of the entire Army. Yet infantry units were scarcely the centerpiece of the GHQ maneuvers, and if infantry soldiers appeared lackadaisical, GHQ's umpiring system was partly to blame, for its portrayal of close combat was not calculated to evoke much understanding, let alone enthusiasm among the umpired. When opposing forces met, their umpires would compare the firepower score of each unit. If one held a 3:1 (or greater), umpire flags would signal it to advance, and the other to retreat. If more evenly matched, both umpires would display red flags, signaling that neither could advance; when this occurred, units remained in place until reinforced, or withdrawn (Fig. II-11). Casualties were assessed, not in any fashion evident to the soldiers, but by subtractions from the firepower score.[92] Perhaps more importantly, the umpires specifically denied infantrymen that moment that was their very reason for being: assault of the enemy position. These aphorisms summarize the whole of infantry doctrine:[93]

> Infantry is charged with the principal mission in combat. It is the basic arm . . . the arm of close combat. . . . The mission of the infantry in the attack is to close with the enemy and capture or destroy him; in defense, to hold its position and repel the hostile attack. . . . Infantry action is characterized by the aggressive fighting spirit and intelligent initiative of all ranks. . . .

Infantry soldiers were taught that any battle was but choreographed violence to set the stage for the climactic infantry assault:[94]

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91 Ibid, pp. 46, 91.

92 Gabel, C.R., *The U.S. Army GHQ Maneuvers of 1941*, op. cit., pp. 46-47.

93 Infantry Field Manual, *Organization and Tactics of Infantry: The Rifle Battalion*, War Department, FM 7-5, Washington, DC: Government Printing Office, 1940, p. 19.

94 Ibid., pp. 50-51.

A heavy burst of fire is delivered by all available weapons, following which the troops rush the hostile position. . . . When the assault is prepared by the fire of artillery or of infantry supporting weapons, the fire ceases or is lifted at a prearranged hour or on a preconcerted signal. Supporting hostile elements capable of firing effectively on the assaulting troops are kept under fire during the assault. Assault fire may be employed by the assaulting troops. Flanking fires of friendly adjacent units are shifted on observation of the supported troops.



Figure II-11. Infantry Close Combat, Louisiana, 1941: Umpires' Red Flags (Center and Left) Signal a Stand-Off

A far cry from flags and umpire score-sheets, that "heavy burst of fire" followed by a "rush." Small wonder that many infantry units displayed little "intelligent initiative" in the Louisiana or Carolina Maneuvers. Or that they sited weapons and moved in the open without regard for cover or concealment, with little evident "aggressive fighting spirit"; that they often disregarded "enemy" blanks being fired at them, or ignored the umpire apparatus for signaling incoming artillery fire, or stopped to watch air attacks that, in actual combat, would have killed them. Still, many infantry lieutenants and captains were reported to be

inept; many did not fulfill their responsibilities to higher commanders for swift, concise reports, or to their subordinates for unambiguous orders. In McNair's words, "The maneuvers were full of examples of officers who not only knew little but displayed no initiative and little common sense." On 30 October 1941, even before the Carolina Maneuvers, McNair published a GHQ training directive outlining 4 months of back-to-basics remedial training that was to progress from the rudiments of weaponry through combined arms tactics, with emphasis on live firing, and on standardized proficiency tests using live ammunition for infantry platoons and battalions.

The Louisiana and Carolina Maneuvers of 1941 (Fig. II-12) convinced McNair that, contrary to his long-held presumption, and that of General Marshall, large-scale, free-play maneuvers contributed little to the development of proficiency in small infantry units. Indeed, with the focus of the chain of command on the operations of the larger units, the large maneuvers may even have allowed uncorrected carelessness and improper technique in squads and platoons to become habitual. The remedy, as he saw it, was realism in training, by which he meant shooting--live fire. He had a deep seated trust in the efficacy of firepower, and he wanted Army training to inculcate a similar belief in every infantryman. In an interview after his trip to North Africa in 1943, he stated that "the concentrated fire of our guns is absolutely crushing. German prisoners say it is beyond endurance. . . ." And in another interview, he noted that "Tactics are naturally changed by the tank and airplane and the guns that smash the two. I don't know just where the equilibrium between guns and mobility will be reached, but I know that tanks and planes can't go into too many guns. Infantry under tank and airplane attack? Hell, infantry is fire power."[95]

Reorganizations of the infantry squad after the war began were intended by AGF, weapon pooling notwithstanding, to increase front-line firepower, restoring the Browning Automatic Rifle, and adding rifle grenade launchers. When the office of Chief of Infantry was eliminated in 1942, McNair reduced the numbers of BAR authorized for the infantry regiment from 189 to 81 [one per rifle squad].[96] The impact of this ruling on regimental firepower can best be understood by noting that the BAR was the closest approximation to a light machine gun then available to the Army.

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95 Henry, F., "Trained by McNair and Fit to Fight," *Baltimore Sunday Sun*, 27 September 1943, p. 1. Whitaker, op. cit., p. 56.

96 Ibid., p. 48.



Figure II-12. Well-Sited Infantry Antitank Gun (37 mm) in the Carolina Maneuvers [3d Crewman is lolling (right)]

The 12-man rifle squads proved awkward in the field, difficult for inexperienced NCOs to control. In 1942 AGF declared that the rifle squad would function subdivided into three teams: ABLE, two scouts; BAKER, the BAR team under the assistant squad leader; and CHARLIE, a five-man team, led by the squad leader, who would close with the enemy in short rushes from one firing position to another, until in position to assault:[97]

> The assault is delivered on orders, on signal of the platoon leaders, or on the initiative of the squad leader. It is delivered at the earliest moment that promises success without regard to the proress of adjacent squads. The squad approaches the hostile resistance by keeping as close as practicable to the supporting fires. When these fires are lifted, the squad may employ assault fire to prevent the enemy from manning his position. In the final stage of the assault the hostile position is overrun in a single rush with the bayonet. Against an entrenched enemy, the final charge may be preceded by a hand-grenade volley. . . .
>
> Assault fire is delivered by a unit during its assault on a hostile position. Automatic riflemen and riflemen with bayonets fixed, all taking full advantage of existing cover suck as tanks, boulders, trees, walls, and mounds, advance rapidly toward the enemy and fire as they advance at areas known or believed to be occupied by hostile personnel. Such fire is usually delivered from the standing position and is executed at a rapid rate. . . .

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97 Infantry Field Manual, *Rifle Company, Rifle Regiment*, War Department, FM 7-10, Washington, DC: Government Printing Office, 1942.

The 12-man/three-team design did not stand the test of combat. The squad leader was expected to order the squad formation (choosing among "squad column," "as skirmishers," or "squad wedge"), select the route and set the pace of advance, and assure proper fire distribution. In battle, twelve-man squads proved to be rare, and complicated evolutions with three teams even rarer, for enemy suppression and friendly casualties usually dictated that squads function with fewer men and simpler movements. Nonetheless, for the sake of robustness AGF retained the large, three-team squad organization until after World War II. Training the squad for combat was accomplished by lectures, demonstrations, and applicatory drills, culminating in "realistic" live-fire tests, in which the squad's three teams went through their paces, engaging silhouette pop-ups as they advanced.[98] AGF doctrine was basically sound: fire is necessary for movement, and movement provides for more deadly fire. The question came down to methods of training for close combat: how to teach infantrymen to advance across the last few tens of yards into the enemy position.

George Marshall's *Infantry in Battle* had been somewhat vague on closing with the enemy:[99]

> As the infantry nears the hostile position the supporting fires are forced to lift. Then must the riflemen themselves furnish both the fire and the movement. At this stage, fire without movement is useless and movement without fire is suicidal. Even with both, the last hundred yards is a touch-and-go proposition demanding a high order of leadership, sound morale, and the will to win.

As Marshall knew well from his time as Assistant Commandant, the Infantry School had a strong proclivity to meet tough issues with intricate technique, and to such it resorted in this instance. The School shifted most of the burden upon infantry platoon leaders, who were taught to command their platoons in a manner that compensated for shortcomings in squad leadership. In July 1943 the Infantry School published[100] a detailed description of its implementation of a Combat Firing Proficiency Test that Lieutenant General McNair had directed be conducted by each infantry division commander

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98 Basic Field Manual, *Military Training*, War Department, FM 21-5. Washington, DC: Government Printing Office, 1941. Technical Manual, *Army Instruction*, War Department, TM 21-250. Washington, DC: Government Printing Office, 1943.

99 *Infantry in Battle*, op. cit., p. 238.

100 *Mailing List*, Volume XXVI, July, 1943, Fort Benning, GA: The Infantry School, pp. 39-61. The *Mailing List* was set up by Marshall for communicating from the School to units.

for each rifle platoon.[101] It is reproduced below (Fig. II-13) as an example of how the Infantry School then expected rifle platoons and squads to be led in combat.

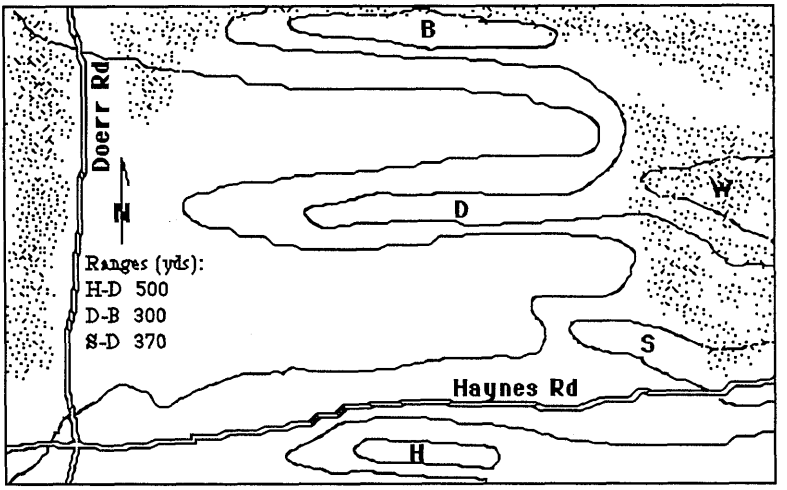


Figure II-13. Combat Firing Proficiency Test, Fort Benning, 1943

At Fort Benning the firing portion of the AGF platoon test took place in a rectangle of open, rolling ground approximately 500 yards east to west by 800 yards north to south, bounded conveniently by woods on the north and east, and roads on the west and south. The tested platoon, while still a half-mile to the south of Hill H, is informed by the Chief Umpire, acting as Company Commander, that enemy have been reported just north of Haynes Road. The platoon is to advance to the north to secure Ridge D. On their west flank, a friendly platoon would advance abreast of them, on the other side of Doerr Road. On their right (east) flank, the Company Commander directs that the platoon position a half-squad (sic) as flank security. The Platoon Leader then orders that the scouts of 1st and 2d Squad will advance under his direction some 500 yards in front of the platoon. He directs the assistant squad leader of 3d Squad to take a six-man patrol out to the east, and to maintain station some 200 yards from 1st Squad. The Platoon Sergeant is to bring the rest of the platoon along in squad columns, echeloned to the left (west), 1st, 2d, 3d.

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101 AGF Training Directive, effective 1 November 1942, *The Procurement and Training of Ground Combat Troops*, op. cit., p. 444. The test was similar to that of the "remedial training" directive, 1 year earlier.

The platoon approaches Haynes Road. The scouts crawl forward just beyond the road, and observe to the front. The Platoon Leader assembles his leaders behind Finger S. He announces that he will send two scouts across the open toward Ridge D, while he moves with two scouts around to the right along the edge of woods W. The half-squad flank patrol is to move deeper into the woods, but keep abreast of the Platoon Leader's two scouts, using a connecting file (soldier who can see both elements). The Platoon Sergeant is to move the rest of the platoon in column 50 yards inside the woodline, and 150 yards behind the Platoon Leader, prepared to assault Ridge D from the east. The platoon resumes movement, but after the scouts advance 100 yards or so, the Chief Umpire causes firecrackers to be set off on Ridge D, and silhouette targets to pop up representing four enemy riflemen. The scouts scramble to firing positions and commence shooting, using tracers to delimit the enemy position. The platoon leader convenes another conference, directing the 1st Squad to deploy as a base of fire on Finger S while he takes the 2d and 3d Squads around through the woods to assault Ridge D. After several clips have been fired, the Chief Umpire causes the "enemy fire" to cease, and the targets to fall. The Platoon Leader sends a messenger back to direct the Platoon Sergeant to assemble the squads on the south slope of D, while he goes to meet the Company Commander at Doerr Road for further orders.

Upon the Platoon Leader's return, he tells the platoon that there is an enemy unit putting up strong resistance on Ridge B. The friendly platoon to the west has advanced two hundred yards north of B, and another friendly platoon is on Hill H south of Haynes Road. The platoon is to attack and capture B. The Platoon Sergeant is to set up a base of fire with 1st Squad on Ridge D. The Platoon Leader will take 2d and 3d Squads to the right through wood W to assault Ridge B from east to west. The flank patrol is to move forward, and to post itself inside the woods to the east of B. The squad leaders return to their units and issue their orders. When they signal "ready," the Platoon Leader moves with the scouts of both squads to his front, and 2d and 3d Squad in squad column formation to his rear. Various targets pop up along Ridge B, and the base of fire engages. Once the Platoon Leader's element reaches its assault position and reforms on line, he lifts supporting fires, using a flare and arm and hand signals. He then signals for the assault, and the squads advance firing from the hip or shoulder at targets which pop up perpendicular to their westward advance along Ridge B. Once the formation is well up on B, the Chief Umpire ends the exercise, assembles the platoon, collects remaining ammunition, and briefs the platoon using a large score card, as shown in Table II-5.

Table II-5. After-Test Critique, AGF Combat Firing Proficiency Test

COMBAT FIRING PROFICIENCY TEST SCORE SHEET

		Weight	*Score*
A.	TACTICS (Total Weight 35)		
1.	TROOP LEADING		
a.	Reconnaissance (plan and execution)	5	_____
b.	Decision and Control	5	_____
c.	Time Required to make decisions, formulate plans and issue orders	5	_____
d.	Brevity, clearness, and practicability of orders	5	_____
	Total 20		_____
2.	EXECUTION BY UNIT AS A WHOLE		
a.	Formations of unit	3	_____
b.	Speed of execution of orders	3	_____
c.	General character of execution	3	_____
d.	Use of flanking fire	3	_____
e.	Prompt engagement of surprise targets	3	_____
	Total 15		_____
B.	TECHNIQUE (Total Weight 35)		
1.	USE OF COVER	12	_____
2.	CONDUCT OF INDIVIDUALS IN MAINTAINING PROPER FORMATIONS	3	_____
3.	TECHNIQUE OF MOVEMENTS	4	_____
4.	FIRE CONTROL	8	_____
5.	DISTRIBUTION OF FIRE	8	_____
	Total 35		_____
C.	EFFECTIVENESS OF FIRE (Total Weight 30)		
1.	NUMBER OF TARGETS HIT	20	_____
	% targets hit: $\frac{\text{no. targets hit}}{\text{no. targets}}$		_____
2.	NUMBER OF HITS ON ALL TARGETS	10	
	%hits: $\frac{\text{no. of hits}}{\text{no. rounds issued minus no. fired}}$		
	Score = %hits × 10 (total weight)		_____
	Total 30		

To "pass," the platoon had to be awarded by the umpires 70 of the 100 points total. In the Infantry School example, the unit scored 77.1, being awarded 30 points for tactics, 26 for techniques, and 21.1 for effectiveness of fire. The Chief Umpire docked the Platoon Leader, under "TROOP LEADING," for vague instructions to the flank patrol, and for relying on visual inspection from D of the route to B, instead of actually moving into the woods northeast of D to check cover and concealment. Under "EXECUTION..." the Umpire nicked one of the squads for repeatedly bunching up, and another for moving too slowly, but awarded the platoon a 3-point bonus for enthusiasm. For "TACTICS" the platoon earned 30 out of 35 points. Under "TECHNIQUE," the Platoon Leader's failure to reconnoiter his route from D to B cost another 4 points because the advancing elements moved out of concealment into a fire break he should have detected, and the squad that theretofore had bunched up repeatedly, straggled during the assault by marching fire onto B. There were other cuts for "fire control" because umpires observed some men firing consistently above their targets; in all, the platoon received 26 of 35 points. As for "EFFECTIVENESS OF FIRE," the platoon hit 21 of 24 targets, fired 377 rounds, and put 136 holes in the targets, for a score of 21.1 out of 30 possible.

The relevance of all the foregoing arithmetic sleight-of-hand to readiness for battle must have been questionable to combat veterans even then. The scoring was largely subjective; the emphasis (70 percent) was plainly on procedure and form: plans, orders, formations, signals. The objective portion of the scoring (30 percent) emphasized hitting cardboard targets and parsimony with ammunition--"fire discipline." The Chief Umpire in his critique made no mention of such obvious issues of tactics and technique as these:

- Persistent breaking up of rifle squads during platoon movements, but failure to mass automatic weapons for the platoon's base of fire.
- Shooting at targets in view instead of suppressing likely or possible enemy positions, and rewarding accuracy of fire, and conserving ammunition, rather than volume of fire or suppressive effect.
- Frenetic movement of the Platoon Leader about the battlefield, and repeated assembling of key leaders while the platoon was halted, deployed within view of the enemy.
- Propensity of the Platoon Leader personally to control the scouts and the half-squad flank patrol rather than his squad leaders, and the questionable utility of the flank patrol in the actions at D and B.
- Advancing on Ridge D without placing fire on Ridge B; failure of the Platoon Leader to request artillery support for either the attack on D or on B.

- Failure to secure Ridge D, per the original order.
- Dubious company tactics: failure to move the platoon on Hill H forward to Ridge D to act as base of fire, so as to use one entire platoon for the assault on B; failure to exploit having advanced a platoon to the north of Ridge B.
- Vacuity of the Platoon Leader's shutting down his base of fire for the assault on B when his Platoon Sergeant on Ridge D had so close [< 300 yards] and so advantaged an angle of fire [90°] across the platoon's front as it advanced.

General Patton had long held that the Army, especially the infantry, *undervalued* firepower and *overvalued* cover and concealment, and Patton taught that leaders had to lead in battle, not orchestrate. Had he been present at the critique of the Fort Benning Combat Firing Proficiency Test, he would probably have commented on it using the same sarcasm with which in 1928 he described "battle per Training Regulations":[102]

> The scouts appear advancing with unerring intelligence despite their unfamiliarity with the terrain, and employing those methods of progression often depicted on the burlesque stage as those of burglars.
>
> Eventually this line of tiptoe dancers exasperates the enemy to the point of firing. . . .
>
> Crawling and wiggling, on the [scouts] press, the superlative excellence of three months training manifesting itself in the precision with which they invariably avail themselves of the redundant protection of sundry blades of grass and dandelion stems.
>
> Eventually they reach a well sited line from which with marvelous accuracy they bring a devastating fire [on the enemy] . . . whose exact location and range have been determined by sundry occult methods. . . .
>
> The leaders in the rear . . . assemble . . . and heedless of whispering bullets and bursting shells, engage in erudite cogitation, whose result is . . . academic orders chiefly remarkable for the surprising information they contain relative to the position and intentions of the yet unlocated enemy.
>
> These orders . . . are clearly received and promptly comprehended; with the result that the leading sections of the assault echelon dribble accurately to a line on or near that established by the scouts, and having ascertained the range and targets from these prescient individuals, coolly set their sights and bring to bear on their doomed opponents an accurate and well distributed fire of awe-inspiring intensity.
>
> After this meticulous killing, sundry infallible signs of enemy weakening in the form of diminishing and less accurate fire and movements to the rear become manifest to the Napoleonic corporals and lieutenants. Immediately,

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102 Blumenson, *The Patton Papers*, op. cit., I, pp. 897-910.

> they engage anew in pantomime while their dauntless soldiers, apprehending the wishes of their leaders by their third eye conveniently placed in the back of their heads, either advance anew or else redistribute their fire to cover those so doing. . . .

Patton deprecated reliance on aimed fire by infantrymern, and the propensity of the infantry to husband its machine guns on positions well to the rear of assaulting troops: "If the firing line is to advance as a result of its own efforts, it must do so by mantaining a superior means of killing in its own hands. . . . The chief deterrent to the advance is the automatic fire of machine guns. This must be countered by machine guns in the firing line. . . ."

To be sure, Benning's Combat Firing Proficiency Test was probably a useful experience for neophytes--green troops who would profit from any opportunity to shoot, move and communicate--but it scarcely passed muster as realistic preparation for close combat. Moreover, it seems likely that many Army posts would have had difficulty replicating it, if only because of range safety restrictions. The tension between safety and the AGF conviction that realistic training equated to actual weapon firing led to constant criticism by AGF inspectors of unit leaders. On 4 December 1943, the G-3 of AGF wrote that:[103]

> Combat firing . . . is our major weakness. . . . Officers with years of background and peacetime safety concern simply will not cut loose with realistic combat firing as a general thing. There are so damn many flags and umpires and control they no more resemble a battlefield than a kindergarten.

By its own standards, AGF failed to achieve realism in infantry training, with the result that its training for dismounted close combat was far less satisfactory than that for the artillery fire support or for mounted combat. The ineptitude of American infantry in close combat led in turn to reliance on combined arms for "advancing the point of the arrow":[104]

> Infantry assault doctrine of World War II was based on the covering-fire tactics of the final phase of World War I. . . . The squad leader and the scout section [sic] would locate the enemy, and the leader would then call upon the second section's fire, which included the squad's Browning Automatic Rifle. Under that fire, the third section would advance.
>
> Unfortunately this method brought only a fraction of the squad's firepower to bear fully in the climactic advance; and too often the squad leader was pinned down with the scout section. Often, the infantry turned for help to the tanks. Partly for this reason, tanks became habitually assigned to all

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103 *The Procurement and Training of Ground Combat Troops*, op. cit., p. 451.

104 Weigley, *History of the United States Army*, op. cit., p. 471.

> sizeable infantry formations. A favorite method of attack came to be one in which a team of three to seven, or possibly more, tanks combined with an infantry company. Sometimes the tanks advanced first, sometimes they advanced with an infantry skirmish line, sometimes the infantry rode them. In any case, the tanks took on centers of resistance, while the infantry eliminated antitank weapons.

General Patton railed throughout the war against splitting up infantry squads--like stripping out its scouts, or sending a half-squad off to cover the flank of an advancing platoon--and inveighed against infantry formations advancing long distances by rushes. Rather, he advocated assaulting with marching fire by rifle platoons supported by tanks as the primary, and usual, method. Patton believed strongly that infantry should close the distance to the enemy position as quickly as it could, and that celerity across that interval was its surest measure for reducing casualties. In his view, for a whole formation to go to ground was to invite death. In England, preparing for the invasion of Europe, he directed Major General Walton Walker to assemble all the regimental and battalion commanders of Third Army for a demonstration of marching fire. To insure that the assault was performed just exactly right, Patton personally took command of the demonstration troops during rehearsals.[105] After the conquest of Germany, he wrote this:[106]

> In the days when the chief small-arms fire on the battlefield was delivered by rifles, it may have been necessary to advance by rushing in order to build up the firing line. Today, when the chief small-arms on the battlefield and the majority of neutralizing fire is delivered by machine guns, mortars and artillery, there is no advantage in advancing by rushes, because, until you get within three hundred yards, small-arms fire has very little effect, whereas when you lie down between rushes, you expose yourself to the effect of shrapnel. When you get to three hundred yards, your own small-arms fire, which is superior to anything now existing or which will probably ever exist, will neutralize that of enemy *small-arms fire*, so that you do not have to advance by rushes. I say this very feelingly because I have seen, on many occasions in maneuvers and in battle, troops advancing by rushes when they were defiladed behind hills and could have gone forward in limousines, had they been available, in perfect impunity.
>
> Marching Fire. The proper way to advance, particularly for troops armed with that magnificent weapon, the M-1 rifle, is to utilize marching fire and keep moving. This fire can be delivered from the shoulder, but it is just as effective if delivered with the butt of the rifle halfway between the belt and the armpit. One round should be fired every two or three paces. The whistle of the bullets, the scream of the ricochet, and the dust, twigs, and branches which are knocked from the ground and the trees have such an effect on the enemy that his small-arms fire becomes negligible.

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105 Blumenson, *The Patton Papers*, op. cit., II, pp. 454-455.

106 Patton, G. S., Jr., *War as I Knew It*, New York: Pyramid, 1966, pp. 293-294.

> Meanwhile, our troops in the rear, using high-angle fire, should put out the enemy's mortars and artillery. As I have stated, even if we fail to put out the mortars and artillery, the most foolish thing possible is to stop under fire. Keep walking forward. Furthermore, the fact that you are shooting adds to your self-confidence, because you feel that you are doing something, and not sitting like a duck in a bathtub being shot at.
>
> In marching fire all weapons should be used . . . I think, if we should say that "Fire is the Queen of Battles," we should avoid arm arguments and come nearer to telling the truth. Battles are won by fire and movement. The purpose of the movement is to get the fire in a more advantageous place to play on the enemy. This is from the rear or flank.
>
> Every soldier should realize that casualties in battle are the result of two factors: first, effective enemy fire, and second, the time during which the soldier is exposed to that fire. The enemy's effectiveness in fire is reduced by your fire or by night attacks. The time you are exposed is reduced by the rapidity of your advance.

As far as infantry training was concerned, Lieutenant General McNair lost his race against time. In September 1942, just before the first battles overseas, an observer at the Louisiana Maneuvers of VII Corps reported that infantry soldiers were poorly trained: insufficiently hardened physically, and inadequately practiced in the tactics and techniques of small units--and so they proved to be at Buna and Kasserine.

In April 1943, McNair visited the Tunisian front, and came back convinced that only battle could produce troops fully ready for battle. But he remained confident, from what he had seen, that the AGF approach to training individual replacements and units of the combat arms was basically sound. He did extend basic individual training, initially from 13 to 14 weeks, and eventually to 17 weeks, to allow extensive field exercises, comparable to that afforded soldiers in unit training. But his main efforts during 1943 were directed at further increases in "realism" through even broader recourse to live-fire exercises. One artillery battery was stationed at each infantry RTC to provide trainees the experience of advancing under artillery fire. During that year the AGF's Mobilization Training Program (MTP) was augmented with three "special battle courses"--often referred to as "battle inoculation" courses--the infiltration course, the close combat course, and the village fighting course:

- The **infiltration course** evoked World War I tactics: trainees were required to crawl under barbed wire while machine gun fire cracked overhead, and explosives detonated nearby.
- The **close combat course** required the trainee to demonstrate ability to shoot at surprise targets while moving over rough terrain: to negotiate a lane in which

he encountered obstacles and pop-up cardboard silhouettes. The 1943 version was relatively short, and did not employ explosions and overhead fire; in 1944, the course was lengthened, and explosions and overhead fire added, and in its final form, late in the war, each lane was "attacked" by two small ad hoc teams advancing in rushes, providing mutual support for each other.

- The **village fighting course**, the most elaborate and "realistic" taught infantry techniques for combat in built-up areas, but also provided practice in application of fire and movement by rushes, and in use of supporting arms, including a tank.

These courses required dedicated facilities and instructors, and were most effective in institutional training, such as that in an RTC, under an expert cadre. Though prescribed by the AGF for units, the courses at the RTC were usually much more battle-like, at least atmospherically, than those units could support. And safety remained a sore point. Lt. Gen. Ben Lear, who succeeded McNair, stated at a conference following inspection of the training of the 86th Division in October 1944, that:[107]

> Yesterday I saw a Close Combat Course. It started out by having a 2d lieutenant in charge, cautioning four men. A little later on I found a captain attempting to caution them. A second or two later a couple of sergeants were trying to influence the team, and when they got two-thirds of the way through, there was a field officer up on the hill controlling it.

On another occasion, Lear observed control personnel in a close-combat exercise with their hands on the backs of the men running the course.

Both under McNair and under Lear, AGF remained committed to the proposition that no infantry division, when delivered to an overseas theater commander, should be "green"--disconcerted at the way a theater of operation functioned, confused by the sprawl and disorder of combat, or at a loss to understand how to comport itself on the battlefield. The AGF's peak success in producing divisions for overseas operations occurred with those activated in the late spring and early summer of 1942 and shipped late in 1943 or early 1944.

Two of these, activated at about the same time, fashioned from similar human resources, merit examination in detail. One division endured a bloody baptism of fire, was for that reason nearly disbanded in Normandy, but then taught itself how to fight, and went on to become one of General Patton's more reliable infantry divisions. The other division quickly adapted to combat in Italy, and improved in efficiency throughout the war.

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107 *The Procurement and Training of Ground Combat Troops*, op. cit., p. 452.

b. Near Failure: The 90th Infantry Division

The 90th Division was one of 24 divisions activated in 1942 from the Organized Reserve: that is, under a handful of Regular Army senior commanders, the division was formed from officers who were individual reservists, and soldiers who were Selective Service inductees (Fig. II-14). The average training time in the United States for those 24 divisions was 23 months. The 90th was activated in March 1942 and was shipped to England in March 1944, having completed a full 2 years of training in the United States, including 2 months on maneuvers in Louisiana under VIII Corps, and 3 months at C-AMA under XV Corps. In that time the division *twice* completed AGF's prescribed MTP, with associated AGF tests, plus "post-graduate" exercises. In England, the 90th Division trained for its deployment on the continent to exploit the D-Day lodgements.

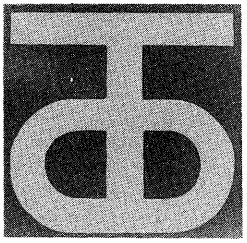


Figure II-14. Shoulder Insignia of the 90th Division

General W.E. DePuy, U.S. Army (Ret.), was then operations officer of the 1st Battalion, 357th Infantry Regiment, 90th Division, and subsequently, after the drive across France, commander of that battalion. He described AGF training in very uncharitable terms:[108]

> The training was procedural-mechanical. With the advantage of hindsight it is clear to me now at least part of what was wrong. We followed the Army Training Program. The so-called ATP was a time oriented process. A unit spent so many hours or days on each subject. For example, 30 hours of field firing, 6 hours on first aid, and 2 weeks on platoon in the attack. The goal or object was to complete the training--get it done! Never mind whether or not the troops learned anything. The process completely obscured the product. . . . The learning function was obscured and secondary to the scheduling function. Few took training very seriously. . . .

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108 DePuy, General W.E., *Changing an Army, An Oral History*, op. cit., pp. 8-11.

Tactical training and testing of infantry units laid heavy emphasis on the sequence of procedures leading up to the moment when the unit would accomplish the infantry mission "to close with and destroy the enemy." Troops were issued a murderous-looking bayonet, and were drilled, amid shouts and grunts, in its use. Squads and platoons were lectured on what formation to use for the Approach March, what sequence of actions to pursue in the Assembly Area, how to array themselves to cross the Line of Departure, how to rearrange in the Attack Position, and how to maintain a line formation during an Assault. Meticulous attention was paid to combat orders, to their format, and to their articulation. The units then solemnly acted out these procedures in tests before anxious superiors and watchful training inspectors. But even so, tactical training was scarcely the centerpiece:

> The emphasis was always on things that we could understand . . . 25 mile marches . . . truck movements . . . communications . . . all the stuff that goes on above the fighting. Incidentally, this is not unknown in today's Army or anybody's army at any time. But I think it was worse there. I don't think it was anybody's particular fault; it was the blind leading the blind.
>
> When we went to war that part of the division which was really well-trained on the combat side was the artillery. The artillery is easier to train because it's very mechanical and mathematical, and they do very well. But the artillery was good, and although [the 90th] was an infantry division, it was the infantry battalions, companies, platoons, and squads that I thought were poorly trained. . . .
>
> [Training programs] included infiltration courses, live-fire exercises, and overhead fire, all against fixed targets. The enemy doesn't shoot back, and so, you don't learn a whole lot, and of course, they were normally not done above maybe, platoon level, or company level at the most. Then, once in a while we would fire the "mad minute" to impress us with our own firepower. However, the M-1 rifle, coupled with the rifle marksmanship program, worked to discourage active firing in combat by the average soldier. He was trained to shoot at and hit a target, but in combat, in the attack, he rarely ever saw a target. So he was indisposed to shoot. The Germans, on the other hand, used machine pistols which were area weapons. That is, they sprayed the area ahead of them, and achieved fire superiority.
>
> . . . We went through the training program, the ATP, once at Camp Barkley, which was culminated by a trip to the Louisiana Maneuvers. And, at the end of that, some people came to test us during division exercises. . . . They were supposed to pronounce whether we were ready or not. They rendered the typical Army report of the time, which said that the troops didn't use much cover and concealment, that they bunched up too much, and that our discipline on the march was only fair, and things like that. In other words, they said what every report has always said about exercises. . . . We went through another ATP cycle at the Desert Training

Center. So I would say that we went through two and a half or three ATP cycles.

DePuy remembers the division being taught marching fire as a "lesson learned" from the battlefronts of North Africa and Italy:[109]

> Marching fire . . . was . . . an effort to maintain fire superiority during the assault. It's not a bad idea, assuming that you put it into the right context. They used marching fire as a method of attack--as the sole method of attack. What they should have done, of course, was position the heavy machine guns and light machine guns and even rifle companies, so as to gain total fire superiority with small arms as well as mortars and artillery, and then, during the assault, use marching fire, which would have maintained the fire superiority . . . the problem with infantry is that while you may get fire superiority through suppression, just at the time when you need it the most, during the assault, when the troops all rise up out of their foxholes or from behind a hedgerow and move forward, you lose it. So, when the enemy then comes up out of his holes and starts to fire at you, you lose the suppression.
>
> So, marching fire obviously was designed to overcome that problem, but somewhere in the transmission between the lessons learned and our unit, marching fire became the tactic through which you attacked. In other words, we lined up two battalions with two companies up and they went across the line of departure, using marching fire. It might have worked if the enemy was not well dug in, not well camouflaged, and very weak; but if the enemy was professional, as the Germans usually were, was well-hidden, and was in very good positions, marching fire as often as not, just wasn't sufficient. We marched into their killing zones. . . .

The 90th Division landed in France on 8 June 1944, and launched its first attack on the morning of 9 June, per pre-D-Day plans. The area of its attack was Normandy *bocage* or hedgerow farmland: small fields surrounded by thick, brush-overgrown walls of earth (Fig. II-15). DePuy points out that none of the regiment's training, neither stateside nor in England, had anticipated fighting in such compartmented terrain, or indeed, had addressed any techniques whatsoever for coping with unexpected constraints on fire and movement:[110]

> We were astride the road to Gourbesville near Amfreville. The regimental plan was to attack with one battalion on each side of the road, and one battalion, the 2d Battalion in reserve. The 1st Battalion was on the left. We attacked straight aheadwith two companies up and one in reserve to

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109 Ibid.

110 Ibid., pp. 24-25. Cf. Ruppenthal, R.G., *Utah Beach to Cherbourg: 6-27 June 1944*, ed., Harrison, G., Washington, DC: Center of Military History, U.S. Army, 1990, pp. 122-131.

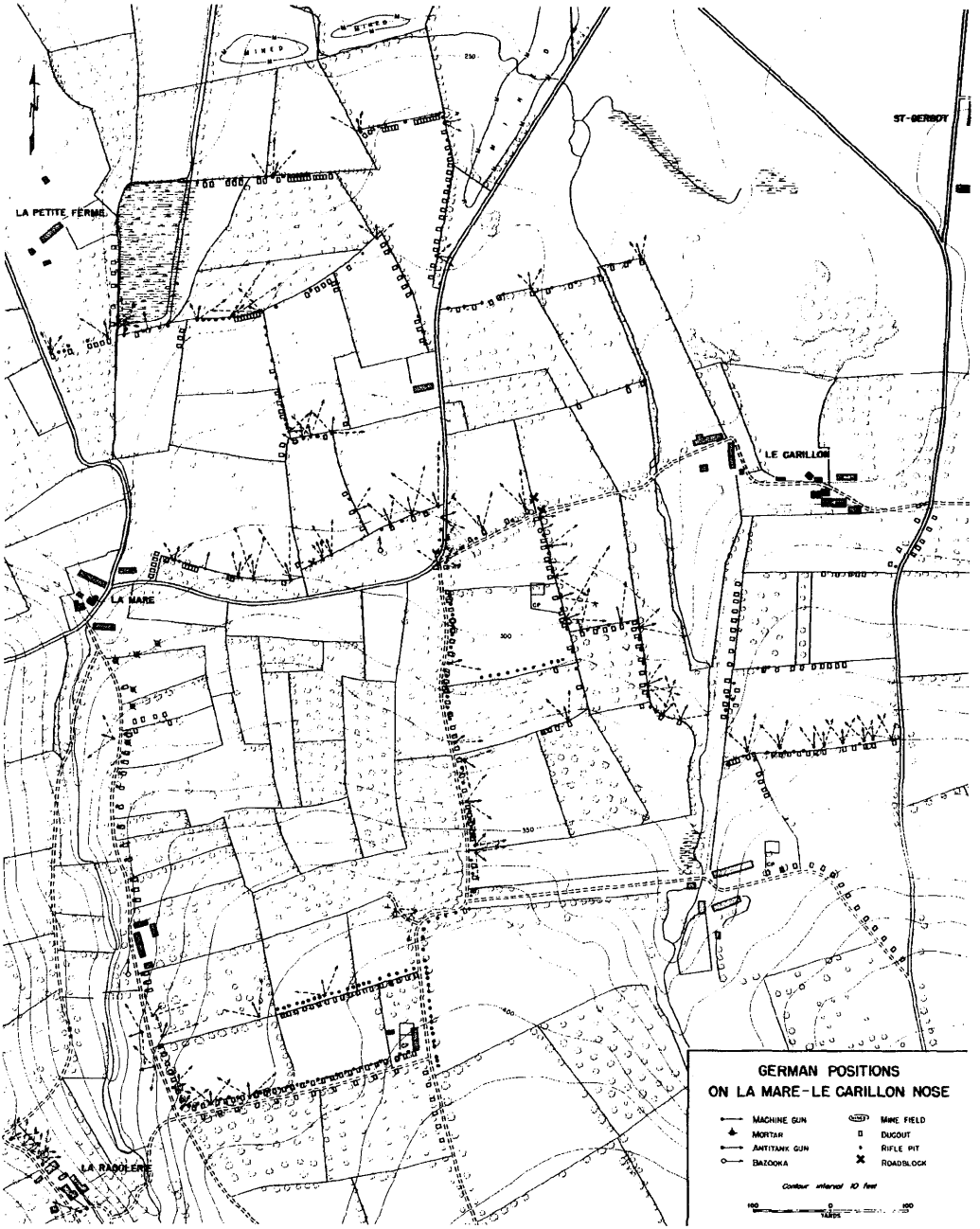


Figure II-15. An Example of German Hedgerow Defenses, Normandy, 1944

follow in center of sector. Each of the forward companies lined up two platoons abreast with two squads on line in the most classic formation out of the book. The artillery preparation was fired from the 105mms in fairly close along the hedgerows, and the 155mms a little deeper. The mortars fired at the first hedgerow.

After about ten minutes of fire, the battalion moved forward. When the lead companies crossed the second or third hedgerow they came under very heavy small arms fire and were caught in an open field. I do not believe that *any* of our troops fired their weapons after the first few minutes. When the attack stopped the Germans threw a heavy barrage of mortar fire into the first and second small fields between the Line of Departure and the forward line of troops. Casualties were very heavy. We had walked into his killing ground. After 30 minutes the lead companies came back to the second hedgerow and that was it. . . .

By 2240 on the 15th, the 3rd Battalion had captured Gourbesville . . . but it cost the lives of hundreds of brave junior officers and soldiers. This was a great bloodletting without much to show in return. . . .

The 90th Division, during its first 6 weeks in action in Normandy, lost 100 percent of its strength in infantry soldiers, and 150 percent of its strength in infantry company officers. DePuy speaks of "heroic efforts and tragic losses among the lower ranking officers and the bewildered troops." He attributes this debacle chiefly to inept leaders at the division level, who were unable or unwilling to weed out incompetent regimental and battalion leaders, or to train their infantry platoons and companies to take ground against skilled resistance.

Consideration was given to the idea of breaking up the division and using it as replacements but fortunately, that course was rejected, and the division eventually pulled itself together through on-the-job training and slow emergence of fighters and leaders through a process of seasoning and natural selection. . . .

A lot of work was done on trying to analyze the way the Germans defended. We finally did figure it out. The Germans would assign a squad to a terrain compartment. In other words, one series of hedgerowed fields, like checkerboards. The Germans would put about two men on the first hedgerow, usually near the corners. The next hedgerow back would be their main position, and the third hedgerow back would be their reserve position. So, when you started the attack, the first two guys would knock off one or two of the attackers and slow things down. Then you had to go over the top of that hedgerow in the face of the main position. You suffered more casualties, and normally, that ended the attack. . . .

Eventually, what we tried to do was to . . . suppress this system with indirect fire . . . and to ensure that the attack would have enough impetus to carry through the whole thing. Toward the end . . . we made one or two such attacks successfully.

> But what we finally learned, which is what all seasoned soldiers finally learn, is not to attack them where they are. The way we cracked those positions was simply by finding a hole somewhere around a flank. Find a hole, get through that hole, and get them in their rear. and then the whole bloody thing would collapse. Then you'd have them in the open. That's the kind of thing I wished we had learned during the two years of training in the United States and during the three months we had in England. . . .

DePuy found that only a few soldiers easily or naturally fought well without specific, on the spot directions. Many, indeed, simply did not actively participate in the fighting. (DePuy's testimony on this score is congruent with the observations of "SLAM" Marshall and others):[111]

> If you left them alone then some ten percent of the soldiers were the ones who actually took the initiative, moved, fired their rifles, threw hand grenades, and so on. The other 90% would defend themselves if they had to, but would not do the other things unless an officer or a sergeant directly ordered them to do it, in which case they usually would do it. I learned that you couldn't depend on them doing things simply because there was a plan to do it, or because of some generalized order to do it, and this included the junior officers. You had to say, ""do this," "do that," "now fire here," and "now move there." You would always end up with a good sergeant or a good officer and three or four men doing all of the work. Unfortunately, the rest contributed to the casualties. . . . I came away absolutely impressed with the fact that the average man, like nine out of ten, or eight out of ten, does not have an instinct for the battlefield, doesn't relish it, and will not act independently except under direct orders. . . .

Most senior leaders of the World War II believed that the only remedy for infantry passivity and ineptitude was vigorous junior officer leadership: such certainly was the conviction of Marshall, McNair, and Patton. But if so, the Army was leaning on a weak reed, for the lieutenant at the point of the arrow on the battle map was usually hastily trained and recently arrived, often the least resourceful soldier present. Battle is a powerful, but expensive teacher for all soldiers, particularly for platoon leaders. DePuy does not doubt that almost any infantry lieutenant would eventually learn by experience how to fight and win. But to learn, he has to survive, and to survive he must contend with the grim calculus of battle:[112]

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111 Ibid., p. 45. Cf. Marshall, S.L.A., *Men Against Fire - the Problem of Battle Command in Future War*, New York: William Morrow, 1947 and 1964, pp. 36-63.

112 DePuy, W.E., "Battle Participation and Leadership," Remarks to the TRADOC Commanders' Conference, USAC&GSC, Fort Leavenworth, KS, March, 1989. MS. The 90th Division was activated in March 1942, participated in the Louisiana Maneuvers of February-March 1943, and in maneuvers at the C-AMA in September-December 1943. In June 1944 the 90th Division was badly battered fighting in the *bocage* west of the Merderet River, and by 31 August 1944 had an accumulated casualty list amounting to 59 percent of its authorized strength; it was by that time under (cont'd)

The whole towering edifice of . . . doctrine--the great investment in high performance weapons--and the elaborate education and training of leaders and soldiers all finally depend upon the execution, in battle, of the platoons which bear those weapons and carry out the maneuvers upon which success depends.

In the natural order of things the lieutenant is the least experienced leader in the unit, the last to arrive, and unhappily, the first to leave in battle. Of course, he has many virtues. He is young and full of hope, trust, vitality, endurance, courage, and intellect. He has an open mind, and he is a fast learner.

In prolonged combat there are two reciprocal forces always at work in a small unit like a company or a platoon. Sadly, the more casualties, the less seasoning--and happily, the more seasoning, the fewer casualties.

And casualties are not solely, often not even primarily the responsibility of lieutenants. It is the job of leaders at battalion and above to tip the scales toward seasoning and away from casualties by skillful and imaginative tactical concepts--in short, to fight battles in ways conducive to keeping lieutenants alive and learning.

When a lieutenant is lost to a platoon, he takes with him a large fraction of the cohesion, teamwork, trust and confidence that are associated with his time on the job and his leadership--not to mention his painfully acquired battlefield skills.

And then, of course, a new man arrives. He is an unknown quantity without credentials and he may not have time to learn them.

Let's look at some hard evidence on that score.

Per infantry regiment of the 90th Division during seven weeks of fighting in Normandy, the average loss in officers was 123 [per week]. About 95% of these were infantry platoon leaders. Weekly losses averaged 48% of the lieutenants commanding rifle and weapons platoons. Thus the average longevity of the lieutenant was just over two weeks. . . . The casualty curve was steep, and the seasoning curve was flat. . . .

Five months later after the dash across France--fighting at Metz, crossing the Mosel and Saar--the division fought in the Battle of the Bulge. During this equal period of seven weeks [the Battle of the Bulge] the average loss of infantry lieutenants was ten percent a week. The longevity of lieutenants increased to over ten weeks. Every mission was accomplished. When the campaign in the Ardennes was over, Eisenhower said he "sure would like to

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the command of its third division commander since D-Day. Cf. Cole, H.M., *The Lorraine Campaign, United States Army in World War II: The European Theater of Operations*, Washington, DC: Historical Division, Department of the Army, 1950, pp. 1, 17-18.

have many more divisions like the 1st, 9th, 90th, and the 2d and 3rd Armored."

> During the five intervening months, the 90th Division had learned how to fight. Partly this was because the seasoning curve was steeper while casualties diminished. And it was because battalion and higher commanders found that there were ways to win battles at reduced costs. One might say it was OJT [on-the-job training]. Most of the battalion commanders were unburdened with doctrine, for most had been to no Army tactical school. They had open minds and a strong allergy against head-on attacks. The killing zone of Normandy left a deep impression. Some battalions learned to move forward through the German defenses without fighting--or more accurately, by avoiding fighting. Sometimes a flank would be found. Sometimes a gap could be discovered and whole units simply slipped through the defenses, often single-file, by stealth, at night. In two instances, in personal memory, individual squads infiltrated directly and independently to the objective.

DePuy chose, as the objective for infiltration, undefended critical ground to the rear of the enemy position so as to reverse his battalion's role from attacker to defender:[113]

> In a number of battles the penetrating battalion simply sat down on a piece of key terrain in the enemy rear. He [the enemy] was then forced to attack to regain control of his sector. In all cases he lost heavily and then abandoned the position. . . .
>
> We also slowly learned to employ direct fire suppression to assist in flanking movements. "Pin em down--and go around em." To do so, we sometimes used entire rifle companies loaded up with all available heavy machine guns as a base of fire. . . .

During the Christmas period of 1944, having received a large batch of replacements, DePuy put his battalion into defensive positions and then took each company through an attack designed to illustrate how to attack: either infiltrate or bypass, and, if the latter, by a wide swing or by heavy volume of direct fire on the enemy position to cover the envelopment.[114]

> In World War II the field manuals and training literature discussed "the gaining of fire superiority." We now call it suppression. It assumes that heavy, controlled, accurate, sustained direct fire can, in fact, shut down the fires of the defending force. The assumption is correct, and flows both ways. We can do it to them, and they can do it to us, and in either case the

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113 DePuy, "Battle Participation and Leadership," op. cit., Cf. DePuy, *Changing an Army*, op. cit., pp. 68, 76-77. Col. Trevor Dupuy has pointed out that ever since introduction of the conoidal bullet assured the defender advantage over the attacker, this sort of role reversal has been a desideratum of successful commanders, such as General Helmuth von Moltke. Dupuy, T.N, *Attrition: Forecasting Battle Casualties and Equipment Losses in Modern War*, Fairfax, VA, Hero Books, 1990, pp. 37-38.

114 DePuy, "Battle Participation and Leadership," Cf. DePuy, *Changing an Army*, op. cit., pp. 75-78.

> battle participation levels can be driven down to near zero percent. Success is a function of tactical skill and relative force strength. It is not simply the product of some character inventory of the opposing soldiers.
>
> The professional leader is, of course, concerned about the motivation of his soldiers and their morale. But he is preoccupied (or should be) with achieving the highest possible level of individual participation by his concept and control of fire, by assignment of sectors and targets, and by active positive command. . . .
>
> The tactical discoveries of World War II were motivated by the sheer necessity of preserving our soldiers and their junior leaders long enough so that they could learn and become effective. This dimension of a leader's responsibility places a discipline upon his selection of tactical concepts.

General DePuy found the German infantry much more effective trainers than McNair's AGF. He learned from the Germans defensive fieldcraft, especially the siting and construction of infantry fighting positions and their array in tactical depth. They also taught him how to use mechanized vehicles for infantry support, and how to suppress enemy fire (in AGF terms, to gain and to maintain fire superiority). One other characteristic of German infantry admired by DePuy was their incessant talking and shouting during small-unit actions. Many Americans mistakenly thought this to be a symptom of rigid direction by a bullying *Feldwebel* of automaton-like *Soldaten*, but to the contrary, it was a control measure that engendered teamwork and cohesion, and counteracted reluctance by any individual to participate actively in the fighting.[115]

Col. Trevor Dupuy, USA (Ret.), the distinguished military historian, has developed an analytical method for evaluating units engaged in battle that specifically considers battle outcome in terms of mission accomplishment, ground controlled, and casualties. In his work on World War II, Dupuy found that, in general, German divisions were superior to American and British counterparts. In 1944, German infantry inflicted three American or British casualties for every two they sustained, and by Dupuy's analysis, 100 German infantrymen were the combat equivalent of 120 American or British infantrymen. Moreover, in the mountains of Italy and the hedgerows of Normandy, German noncommissioned officers furnished that initiative and leadership that on the Allied side was provided by officers.[116] When operating alone or in pairs, German infantrymen

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115 Ibid., pp. 95-96.

116 Dupuy, T.N., *A Genius for War: The German Army and General Staff, 1807-1945*, London: MacDonald and Jane's, 1977, pp. 3-5, 292-294, 305-306. George Marshall observed of German infantry that "if you left a sergeant with a few men, he fought [as if] he had a lieutenant general in command." Pogue, F.C., *George C. Marshall: Organizer of Victory*, New York: Viking, 1973, p. 82.

were notably more effective than Allied soldiers. During the Ardennes offensive--the Battle of the Bulge--the Germans themselves resorted to the technique used by General DePuy, inconspicuous filtering in numerous small detachments into areas weakly held by American infantry.[117] Such was the ability and independence of small units of German infantry that they invariably were able to counterattack against any Allied advance, hitting the attackers before they had a chance to reorganize:[118]

> You can expect such a counter-attack, usually by 10 to 20 men, not more than 5 minutes after you close to the German positions. They are usually well-armed with light machine guns and machine pistols, and counter-attack by fire and movement. They keep up a heavy fire while small details, even individuals, alternatively push forward. The Germans almost always attack your flank. They seldom close with the bayonet, but try to drive you out by fire.

The United States Army's infantry can ill afford, in the future, to take the field so unprepared for close combat against so capable an enemy.

c. Success: The 88th Infantry Division

The misfortunes of the American divisions who fought in the American Army's first battles, and that of the 90th Division in Normandy, were not repeated in all. Some U.S. divisions fought ably from the start, and got better as the war progressed. Colonel Trevor Dupuy in his historical analyses has compared the battle performance of specific German, British, and American divisions, and identified the U.S. 88th Infantry Division as among the most effective in any theater on either side. Dupuy found that the 88th Division's combat ability was surpassed, in the sample he examined, only by four elite German divisions, and that it was markedly superior to other Allied divisions--Dupuy marks the performance of the 88th Division 43 percent better than the average of other U.S. divisions he has analyzed, and he notes that, analytically, that meant, compared with the average, it was *twice as effective* in battle (1.43^2).[119]

The 88th Division was activated in July 1942, from the Organized Reserve, like the 90th. However, the 88th Division was shipped overseas after just 16 months of training, 3 months earlier than any of the other divisions activated in 1942, and 8 months earlier than the 90th. In fact, only one other division moved through stateside training faster than the

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117 English, J. A., *A Perspective on Infantry*, New York: Praeger, 1981, pp. 181-186.

118 Canadian Army training memoranda, cited in ibid.

119 Dupuy, T.N., *Understanding War*, New York: Paragon House, 1987, pp. 114-121, 234-235.

88th Division, and that was the 34th Infantry Division, shipped from the AGF 11 months after its activation, but moved to Northern Ireland for an additional 5 months of training there before the invasion of North Africa. The 88th Division passed its AGF training tests handily, participated in the Louisiana Maneuvers of June-August 1943, eliciting high praise from the umpires, and departed for Italy in November 1943, becoming the first of the all-draftee divisions to go to war. In 1949, General Marshall recalled the arrival of the 88th Division overseas as "the great psychological turning point in the building of a battle-worthy army."[120] By 1 March 1944 the Division was in combat south of Rome, on the bitterly contested Gustav Line. The best accolade for McNair's training system came from soldiers of the 88th quoted as saying, of their first battles: "This is no worse than maneuvers."[121]

In May and June 1944 the 88th Division took part in Operation DIADEM, the attack on Rome, and was among the first Allied forces into the Italian capital--a remarkable performance for an inexperienced division. The War Diary of the German Tenth Army referred to the 88th as "shock troops," and when the 88th went into line, the Germans shifted their reserves, anticipating that its presence heralded the main attack. From the very beginning, that division appeared to be battle-worthy, and seemed to improve steadily each day it was in combat. Why?

Col. Dupuy attributes the 88th Division's performance mainly to the leadership of its commander, Major General John E. Sloan, an Annapolis graduate (class of 1910) (Fig. II-16). AGF screening had eliminated Sloan from consideration for a division command because of his age, but McNair granted him a waiver on the recommendation of his deputy, then-Brigadier General Mark Clark, who knew Sloan as a particularly effective instructor at Leavenworth in the 1930s. Sloan was remembered by his troops in the 88th as something of a martinet during the AGF MTP, a stickler for smart salutes and proper uniform even in the field, and a demanding task master during tactical training. Veterans of the division's combat in Italy, asked in later years about Sloan, remarked on his personal presence in the front lines, his courage, his aggressiveness, and his strict discipline. Col. Dupuy's study led him to cite also Sloan's attention to detail, his inspirational talks and messages to his troops, his friendly gestures to establish and maintain rapport with

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120 Fisher, E.F., *From Cassino to the Alps*, ed., Matloff, M., United States Army in World War II: The Mediterranean Theater of Operations, Washington, DC: Historical Division, Department of the Army, 1977, p. 23.

121 *The Procurement and Training of Ground Combat Troops*, op. cit., p. 455.

subordinates, his grasp of the "big picture" and his ability to communicate same to his units, his insistence that subordinates receive everything they needed to perform their mission, his high standards for performance on any mission, and his quickness to relieve any subordinate who could not or would not do his job. Sloan made his soldiers confident of their division. Dupuy also points out that Sloan never ceased to train them:[122]

> During lulls in battle, and during rest periods, the division trained. One reason why his division ranked right up with the best of the German divisions was that Sloan carried out rear-area training programs and demanded standards of performance very similar to those characteristics of the Germans, while showing similar interest in, and concern for his men. He also demanded of his officers a professionalism comparable to that of the Germans. Replacements were soon imbued with the spirit of the division. When the division was out on the line, Sloan insisted upon smart salutes and buttoned buttons, and got them from proud soldiers.



Figure II-16. Major General John E. Sloan

But there is more to the excellence of the 88th Division than just the division commander himself. Colonel James C. Fry took command of the 350th Infantry of the 88th Division just 1 week before DIADEM, the attack to Rome, was to begin, and shortly thereafter led the regiment in a 10-mile-deep penetration of German defenses.[123] On

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122 Dupuy, op. cit., p. 120.

123 Fisher, E.F., Jr., *Casino to the Alps*, United States Army in World War II: The Mediterranean Theater of Operations, Washington, DC: Historical Division, Department of the Army, 1977, p. 95.

20 May 1944, Fry went forward to find out what was delaying the advance of one of his infantry battalions:[124]

> The fight was in an orchard that was beautifully green, with some of the trees still in bloom. Grass from knee to waist high was adequate to hide deployed infantry. It was a sunny and delightful morning, a nice day to be alive and a good day to die. . . .
>
> Alternately running and crawling, I moved cautiously among the trees, trying to get a picture of the tactical problem. In what seemed only seconds, I was with a platoon of riflemen firing from the bank of an irrigation ditch. A young soldier quickly informed me that there was no one in front of them except the enemy. . . .
>
> The pre-battle training of the regiment had not included team-type of instruction that required individual initiative under such conditions. Men were brave enough, but they didn't know exactly what was expected of them. Everyone hugged the ground and waited. To rise and issue orders would be equivalent to suicide.
>
> I yelled at nearby riflemen to move forward by short rushes, and realized too late that this was no place for a regimental commander. There was little I could do from this position to influence the overall fight. I was in the front line and whether I liked it or not would have to be a platoon leader for the time being. I kept calling to men near me to keep firing at any spot where they thought the enemy might be hidden, and with the sound of the enemy rifles to guide us, we inched slowly forward. . . . Squad leaders and assistants who were trying to guide men forward were being hit.
>
> Suddenly a medium tank came lumbering up through the orchard from the rear. This was the direct artillery support the riflemen needed so badly. It was the deciding factor in this fight. Within a few minutes, a white flag could be seen waving from our side of the enemy position and machine gun bullets stopped bouncing off the tank. I called "Cease Fire" in my best parade ground voice. Sixteen badly frightened prisoners came running down the hill with hands held high above their heads. One hundred and ten prisoners were captured before the fight finally ended.
>
> Among those who were killed on that sunny morning were three officers and six squad leaders of that battalion of my regiment. . . . In the interval following [Rome] and subsequent campaigns we devoted the maximum available training time to developing battle team type action, so that each man would *know* what was expected of him under aimed enemy fire.

Fry trained his soldiers to know that when shot at, each man was expected immediately to join his comrades in shooting back to suppress enemy fire, and to move

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124 Fry, J.C., *Assault Battle Drill*, Harrisburg, PA: The Military Service Publishing Company, 1955, pp. 8-9. Fry (USMA, Class of June 14, 1922) assumed command of the 88th (Blue Devils) Division in 1945.

forward in teams: one team subjecting the enemy positions to maximum suppressive fire, and the other advancing, yet exposing only a minimum number of men at any one time. To do so, Fry had them practice what he called "assault battle drill." The most basic drill consisted of two men advancing to throw a grenade into an enemy position by alternating fire and movement, one covering by fire the rush of the other. Then the drills progressed to small teams alternating in fire and movement, always with live-fire, always observed and critiqued by a leader. The training would then go on to utilize similar teamwork within squad and platoon attack exercises, or within training for combat patrols.[125]

"SLAM" Marshall enunciated the principle both DePuy and Fry recognized in these terms:[126]

> Green troops are more likely to flee the field than others only because they have not learned to think and act together. . . . With the growth of experience troops learn to apply the lessons of contact and communicating, and out of these things comes the tactical cohesion which enables a group of individuals to make the most of their united strength. . . .
>
> Is it fully appreciated that the most general cause of small failures along our combat line, which frequently promote the confusions of larger bodies of troops, is the individual failure of the American soldier to respect this simple but fundamental principle? Our aggregate tactical weakness stems largely from this failing. We have encouraged the man to think creatively as a person without stimulating him to act and speak at all times as a member of a team. The emphasis should be kept eternally on the main point: *His first duty is to join his force to the others!* Squad unity comes to full cooperation between each man and his neighbor. There is no battle strength within the company or the regiment except as it derives from this basic element within the smallest component.

Fry reports that he used his assault battle drills in September 1944, to prepare his regiment for its attack through the Santerno Valley, in the Appenines. "Our purpose was to develop individual confidence, assurance, and initiative similar to that of a smooth-working basketball or football team."[127] He wrote an account of that attack, published in the *Saturday Evening Post* in 1949, that was widely applauded by veterans of the war in Italy as a superb description of battle leadership. In late September the 350th Infantry regiment, advancing toward the Po Valley along the right ridge of the Santerno compartment, seized a key mountain top, Monte Battaglia, and held it against determined German counterattacks

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125 Ibid., pp. 32-35.

126 Marshall, S.L.A., *Men Against Fire*, op. cit., pp. 124-127.

127 Fry, op. cit., p. vii. Appendix, "One Week in Hell," pp. 94-112.

during a week of see-saw, small unit engagements that cost the 350th 300 dead and 500 wounded.[128]

In one passage, Fry gives the benefit of doubt to a newly arrived replacement captain over the latter's hesitation under fire, and leaves him commanding a company, but under observation as a "suspected weakling." A week later, the captain deserted his company under fire.

Fry went on to command the Second Infantry Division during the Korea War, and afterwards published a book on infantry fighting technique. The foreword to this book was written by Lieutenant General James M. Gavin, himself a redoubtable infantry leader. Gavin pointed out that:[129]

> Since time immemorial military men have sought ways and means of imparting combat experience to young soldiers destined to enter combat. Volumes have been written on the subject, and included among them, are many training manuals. The problem, however, still remains our most challenging one, and one that we have not, so far, satisfactorily solved.
>
> The first hours of combat are the most important in a soldier's life. If he survives those first hours, he is then a veteran and very likely will have a high probability of later survival. All too frequently a young battle leader's reaction is, "You can throw the book out the window: this is the real thing." After a little more experience and with time to think over what he has been through, the same individual usually comes around to a realization that what has been taught is essentially sound. He simply did not understand its practical application.
>
> General Fry's book is a contribution to the solution of this problem--the problem of adaptation to first combat and how to make the most in the shortest possible time of what has been learned by others. As he points out, there are only a few things that a soldier can do when he is first shot at. He and his team-mates may as well learn what they are and learn to do them. . . . It is far better to have a reasonably good plan and close with the enemy aggressively at once. Assault Battle Drill provides this, not only for the first fight, but for those that follow as one gains in experience and learns when to deviate from the pattern as well as when to adhere. . . .

Unfortunately, despite a shift in doctrine in 1956 providing two fire teams within the rifle squad, the Army fought in Vietnam with its close combat training little improved over that of McNair's AGF during World War II, or the Army's training base during Korea. In both Asian wars, teamwork in squads, if it could be achieved at all, tended to

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128 Fisher, *Cassino to the Alps*, op. cit., pp. 348-351.

129 Fry, op. cit., p. v.

dissipate rapidly because of casualties and rotation, and declining experience among leaders, especially noncomissioned officers. Toward the end of the Vietnam War, it was not uncommon to find rifle platoons with but a single sergeant with more than 2 years' service. Thus, it may fairly be said that, with respect to rifle squads at the arrow-points, the U.S. Army did not progress much beyond 1944-1945 until the final years of the Vietnam War. In 1973, the Army activated the Training and Doctrine Command under the command of General W.E. DePuy (Fig. II-17). Among DePuy's early directives were orders to the Army's Training Centers and Schools to add to basic individual training exercises in fire and movement remarkably like Fry's "assault battle drill," to find additional improved techniques for both offensive and defensive close combat, and to discover other ways better to train the Army for war.



Figure II-17. General W.E. DePuy, TRADOC, 1973

III. DEPUY'S CONVICTION: TECHNIQUE FOR CLOSE COMBAT

> No general can accustom an army to war. Peacetime maneuvers are a feeble substitute for the real thing; but even they can give an army an advantage over others whose training is confined to routine, mechanical drill. To plan maneuvers so that some of the elements of friction are involved, which will train officers' judgement, common sense and resolution is far more worthwhile than inexperienced people might think. It is immensely important that no soldier, whatever his rank, should wait for war to expose him to those aspects of active service that amaze and confuse him when he first comes across them. . . .
>
> Carl von Clausewitz, *On War*[1]

In 1973, the Army was ordered to reduce its active strength some 50 percent, to set aside reliance on conscription as its source of manpower, and yet to maintain half its units deployed overseas. For efficiency, the Army deactivated the relatively small Combat Development Command that had theretofore looked after its doctrine and materiel development, and the huge Continental Army Command (CONARC) that had commanded all Army forces and all institutional training facilities in CONUS--the lineal descendant of McNair's GHQ and Army Ground Forces. In the Army reorganization known as STEADFAST, troop units were placed under one new command, Forces Command or FORSCOM, and combat development activities, schools, and training centers were combined under the training and Doctrine Command or TRADOC. Lt. Gen. DePuy was the Army General Staff principal who proposed and gained approval for that reorganization. As he put it:[2]

> CONARC was clearly too big to be managed [effectively]. So, the concept was to split CONARC in half, and take the troop part out and call it something else. Or, describing it the other way around, pull the schools and training centers out, and then CONARC would be divided into two commands. The next thought which automatically came along was, if you are going to create a separate schools and training command, then why not combine it with the Combat Development Command (CDC)? The interface

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1 Clausewitz, Carl von, *On War*, Translated and edited by Howard, M., and Paret, P., Princeton, NJ: Princeton University Press, 1976, p. 122.

2 DePuy, *Changing an Army*, op. cit., p. 177.

between the CDC and the school system had always been very important but very difficult to manage. Although there was a Combat Development Agency at each school, it did not belong to the school. Also, doctrine was really the business of the schools, which taught it to the Army. So, the simple framework for the whole reorganization was just that--split CONARC in two, and combine CDC with the schools and training center part, and call it something new.

But for General DePuy, there was more at stake than managerial effectiveness. DePuy had what he himself termed "a fire in the belly" over the issue of training commanders and soldiers for close combat, a deep, abiding concern that the Army's mission was in that respect unaccomplished. He took over TRADOC with zest, perhaps not knowing what exactly he wanted to do, but sensing that he was in a position at last to remedy a longstanding malady. The following is a transcript of his remarks at Fort Benning in April 1973, to the Commandant of the Infantry School and members of the Combat Arms Training Board [at that time DePuy was the Deputy Commanding General of CONARC, on his initial "look around" before the activation of TRADOC, scheduled for July 1]; his foresight is remarkable:[3]

> There is a new mission of the Infantry, that was not seen in Vietnam because terrain was not important to the enemy. Terrain was important to us. If you had a front line of some kind, the whole outcome of the battle could well depend on decisive terrain. . . . Let's say there is a crossroad of two major highways running through defiles. Now we can put an infantry force on those [defiles]. You used to have to do it with paratroopers. Now you can do it with helicopters. Two or three hours of time to get set for the [enemy] armor with the TOW and the DRAGON could be the critical move for you and could absolutely tie the [enemy] in knots.
>
> Now if you agree that is a logical scenario, you have to ask yourself whether or not we are training for that at the Infantry School. Are infantry battalions, companies, platoons, and squads trained to be placed on a hill and given several hours before they get hit hard? Are the positions critiqued? What happens if the positions are in the open or attacked at night? What and where are the positions--who critiques each and every one of them? Now ask yourselves if we have come to grips with the policies required and have bitten the bullet on how to do that. The scenario tells me that you will not survive up there under this tank attack unless you have taken full advantage of the terrain and that you have both cover and concealment, you've got rear slope defenses, you've got every trick that the terrain will provide you. You're gonna use every wrinkle out there. That,

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3 DePuy, W.E., Letter, Combat Arms Training Board, Fort Benning, GA, to Brigadier General Richardson (Assistant Commandant, U.S. Army Infantry School), dated 6 April 1973, subject: Visit of Lieutenant General DePuy to USACATB on 3 April 1973, transmitting a transcript of DePuy's remarks, and a copy of an article he had written for *Army* magazine, published in its March 1958 edition, describing squad movement technique.

> to me, may well be one of the principal use of airmobile infantry on a battlefield. It could be way out to hell and gone 100 miles--it could be out there within the critical immediate battlefield. . . .
>
> I think we are going to be a professional Army. We're going to be a small Army, relatively speaking.
>
> We are moving away from World War II. The Army to which we all belong psychologically and philosophically stems from World War II in which we expanded a 200,000 man Army into an 8,000,000 man Army, and set up a lot of Training Centers like Fort Jackson, and we trained a lot of people before they went overseas just enough so that the Army wouldn't be tarred and feathered by the populace. And we trained a lot of lieutenants just to the point where it isn't a national disgrace to put them on the battlefield. I was one of them, I know that, and we kind of went to war and let survival of the fittest [prevail] . . . if one tank battalion wouldn't do, we used three. Now, we don't have that [recourse] anymore. . . .
>
> The world doesn't anticipate that kind of a war. We're going to have small exquisite, elegant, short, violent, important actions. . . .
>
> One of our tank battalions has to be the match of four of theirs, in training and in actual capability. We have to be able to take a risk and put an Infantry battalion down on [a strategic objective]. . . .

DePuy's prescience was proven in Grenada, Panama, and the Persian Gulf. His "fire in the belly" was fueled by three convictions:

(1) Large-scale maneuvers were a thing of the past; they were already so in CONUS, and soon would be so overseas as well. "The ecologists will make you stop fighting if you're raising too much dust."

(2) Casualties of the magnitude of the past were likewise intolerable, and central to reducing these was heightened professionalism with tactics and technique for close combat.

(3) TRADOC, in stark contrast to McNair's AGF, or its successor, CONARC, was to be responsible for the entire Army's training and modernization, not just the functioning of the training base in CONUS. TRADOC was to prepare the Army for its next war, and to be the architect of the future Army.

A. COMBINED ARMS

George Marshall and Lesley McNair, as they designed and trained World War II divisions, were absolutely right about the essentiality of combining the combat power of the several arms and services. They were also quite right about the importance of providing experiential learning for commanders in the employment of large units of the combined arms. Still, the mechanism of maneuvers, with the umpiring system of the

World War II era, left much to be desired. Marshall and McNair both knew that, despite maneuvers, the AGF fell well short of its objectives with respect to air-ground cooperation--and that was at a time when Marshall nominally commanded the Army Air Forces. Nor had maneuvers revealed the shortcomings of McNair's Tank Destroyer concept. But Marshall and McNair were essentially correct in seeking to find out what works with troops, rather than relying on what the military theoreticians teach.

Their artillery was literally a smashing success. The fundamental features of their armored division--its triangular patch emblazoned for the union of armor, infantry and artillery--are reflected in contemporary armored and mechanized infantry divisions, and have influenced all other types of U.S. Army divisions as well. Their infantry division proved adaptable, with attachments of armor, antiarmor, and engineers, to a wide range of circumstances of enemy, terrain, and mission, and fought well, when properly led, in Patton's Third Army in Central Europe, in Clark's Fifth Army in Italy, and in Krueger's Eighth Army in the Pacific. Although both Marshall and McNair had worried about command and control of the several arms and services at echelons above division, by and large the Army readily fielded the requisite commanders, staffs, and communications for corps, armies, and army groups. American commanders--from the Pentagon to the theaters of war--proved adept at drawing the large arrows on the operations map, and setting up and directing the support mechanisms for the maneuver forces put in motion thereby. Their performance in preparing for and directing close combat was less felicitous.

Even in the aftermath of the war, the consensus on "lessons learned," developed largely through boards of combat-experienced senior officers, proved to be far from durable. Concerning the tank--scarcely the most successful weapon system produced by the U.S. Army--the "lesson" that it is the best weapon for countering another tank contributed to the early defeats in Korea, in that it may have slowed or arrested development of infantry antiarmor weapons. U.S. infantry units thrown into battle in 1950 without tank support vainly attempted to stop North Korean Soviet-manufactured T-34 tanks with artillery and the World War II 2.36-inch "bazooka" rocket launcher--the disaster of Task Force Smith was in that sense the direct result of wrongly perceiving the lessons in World War II.[4] What the Germans learned from World War II was that "the best defense against the tank is the antitank gun"--or so Rommel wrote in the summer of 1943, and Rommel was then prepared to trade riflemen for improved antiarmor firepower within

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4 Gugeler, R.A., *Combat Actions in Korea*, Washington, DC: Office of the Chief of Military History, U.S.A., 1970, pp. 3-19.

infantry companies.[5] But the flaws in American infantry went well beyond its lack of antiarmor defenses. The performance of infantry in battle disappointed Marshall and McNair during World War II, and the Army's failure, in the aftermath of that war, better to arm and to train its infantry for future wars seems explainable only as a by-product of contemporary fascination with battlefield nuclear weapons. Coherent doctrine, organization, equipment, and training for infantry remained elusive in the 30 years following 1945.

B. ADVANCING THE ARROWS

George Marshall's strategic responsibilities, and probably his abiding trust in McNair, foreclosed his personally becoming involved in the tactical training of infantrymen. He sensed that McNair's training system was troubled in that respect, but attributed its shortcomings to difficulty in training junior leaders.[6] Until the end of his life, he remained sensitive to charges that he had coddled soldiers, or that the Army was lax in its training compared with that of other services:[7]

> Mr. Roosevelt allowed the navy to proceed with volunteers and the Marine Corps to proceed with volunteers for a long time. That made it very hard on the army--very hard--and I think it . . . most unwise.
>
> You take the naval thing--that is, to get a very efficient infantry outfit requires a world more training than it does for a [naval] job . . . you know where it is. You know the exact place where you are going to stand--for most of them during the battle. You take a bath before you go. You put on fresh underclothes. You sleep in the same bed that you slept in before you get into action.
>
> While the poor devil in the army is marching tremendous distances, he is in the mud, he's filthy dirty, he hasn't had a full meal, and he makes his maximum exertion before the fight, and a minimum of sleep and a minimum of well-prepared food, and then he fights in a place he has never seen before and probably goes into it in the hours of darkness. His communications are not fastened in by some contractor like Westinghouse [on] a ship. His communications are mobile and have moved about and generally go into place during the night or very hastily in the daytime. He may never see them. He may work with artillery he never lays his eyes on, which labors far in the rear and with communications that carry back reports of targets.

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5 *Infantry for Battle in Europe, 1978*, op. cit., p. 8. Rommel fought combined arms teams, in which tanks, antitank guns, infantry and artillery played complementary roles.

6 Pogue, *Organizer of Victory*, op. cit., p. 83.

7 Marshall, George Catlett, *George C. Marshall Interviews and Reminiscences for Forrest C. Pogue: Transcript and Notes, 1956-1957*, op. cit., pp. 425-426.

> So **we almost never have completely trained infantry**. We came more near it in this war than in any other, but we were under great disadvantage in the fact that those other services had volunteers and we did not. It was under **a completely mistaken illusion that [infantry] was easy to train. It's been easy to badly train, and it's been badly trained in every war we've had**. And I made a Herculean effort to see it was rightly trained in this war. And if I hadn't had a very friendly Congress with me, I never would have gotten by with it, because they thought I was . . . doing too much in the way of preparations with these men. I was moving them out to the West Coast to that Desert Training Center; that cost money to get them out there. **I gave them every bit of training that we could work out for them**, and they profited greatly by it when we got them over to Europe. [Emphasis added]

Marshall certainly did concern himself personally throughout World War II with matters of troop welfare, and made support of infantry morale a personal cause. In the fall of 1943 he wrote to the theater commanders that:

> An aggressive, skillful infantry is vital to our success and . . . the individual courage, stamina, pride and relentless purpose of the infantry soldier is essential. . . .

Six months later he pressed the Army staff for measures to improve the morale of infantrymen, and to keep their numbers up to strength, noting that they were only 11 percent of the Army (air and ground), but suffered 60 percent of the casualties:[8]

> It might well be charged that we have made the mistake of having too much of air and tank and other special weapons and units and too little of the rifleman for whom all these other combat arms must concentrate to get him forward with the least punishment and losses. I don't want to discourage the rifleman and yet I want his role made clear and exalted. . . .

Noting that the Air Medal seemed to have boosted pride among airmen, and convinced that the infantry needed a similar award, the Chief of Staff personally intervened to persuade the Commander in Chief to establish the Bronze Star Medal for "heroic and meritorious achievement or service, not involving participation in aerial flight, in connection with military and naval operations against an enemy of the United States." In mid-1944, after months of explanations and pleas, Marshall and McNair won authorization to issue Expert Infantryman and Combat Infantryman badges, with additional monthly pay of five dollars for the first, and ten dollars for the second.[9]

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8 Ibid., p. 86.

9 Ibid., p. 88.

But the point discovered by DePuy and Fry in battle, that teamwork within the squad was more important than any individual quality, and could avoid needless casualties, seems to have eluded both McNair and Marshall. They centered their attention on the individual training of the infantryman, and on the individual junior officer. Both followed anxiously the progress of the arrows across their operations map, but neither seems to have made the connection between that progress and the techniques of close combat, or the necessity for collective training of infantry teams to advance the arrows.

The American Army paid for this lacuna not only in World War II, but also in Korea and Vietnam. By mid-1944, the U.S. Army had been forced out of the business of training divisions, and had to concentrate on operating Replacement Training Centers. These became quite efficient, in a sausage-factory sort of way. When the Army went to war in 1950, and again in 1965, there were a few division activations, and some revisiting of the McNair Mobilization Training Program, but by and large the Army simply increased inductions under Selective Service, opened up additional RTC assembly lines, and thus assured a stream of individual replacements to maintain the strength of divisions fighting in Asia. This training was a great accomplishment in many ways, but it, and the overall personnel policy it supported, operated to the distinct disadvantage of the infantry platoons in those divisions, constantly being drained not only by casualties but also by rotations, both in-theater and homeward. The notion of teamwork within the squad was very difficult to instill and to maintain in such platoons, and as General Fry points out, the consequence was undoubtedly needless casualties.

From 1944 through 1974, the primary product of the Army's training base--as the CONUS service schools and training centers that grew out of the AGF institutions came to be called--was individual replacements. Individual and collective training in units was relegated to unit commanders, who were to be guided by a version of the AGF MTP called the Army Training Program (ATP). The Combat Firing Proficiency Test prescribed by the AGF, described in detail above, was virtually the same as the Field Exercise for a Rifle Platoon in the Attack, prescribed in 1973--an approach march, movement to contact, encounter with enemy fire, return fire, and assault--all via live firing at pop-up cardboard targets--followed by a meticulous umpire critique based on a list of 50 specific procedures (checked observed or not observed) within the platoon.[10] Over all those years, 1943-

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10 Field Manual 105-5, *Maneuver Control*, Headquarters, Department of the Army, December 1973, Appendix B.

1973, Army training for dismounted action at the point of the arrow remained formulary, complicated, and situationally vague.

1. Infantry Attacking

After World War II, Patton's method of assault by marching fire was adopted as doctrine applicable Army-wide--another "lesson learned" that required reconsideration--and that doctrine was often unthinkingly, and even slavishly applied, even in the absence of tank support for the advancing infantry. Further, his dictum that squads should not be split--by which he intended to foreclose sending off a detachment on a separate mission--came to be interpreted as ruling out dividing the squad into teams to provide fire support for movement. A nine-man squad was established, with one BAR, and platoons were trained to use the squad as the basic tactical element, advancing by having one squad support the others, and assaulting on line with marching fire. It was evident to many infantrymen that marching fire would be difficult, if not impossible, in mountains, the *bocage*, dense forests, jungles, or other constricted terrain, or among well-prepared enemy positions. Had Patton lived, he probably could have prevented this miscarriage, for he himself had stressed the importance of fire and movement within the rifle squad:[11]

> Squads should seldom be split. However, if it is necessary to split a squad, be sure that the unit separated is at least capable of mutual support. This means that the unit separated from the squad itself should not be fewer than three men. The squad possesses in itself the weapons necessary for a base fire and a maneuvering element. This should be its invariable method of attack, but the squad leader should not spend so much time thinking which way he is going to envelop that he suffers casualties which could have been avoided had he attacked at once. In small operations as in large, speed is the essential element of success. If the difference between the two possible flanks for envelopment is so small that it requires thought, the time wasted in thought is not well used. Remember that the life of the infantry squad depends on its capacity for fire. It must fire.

But in the early 1950's, even while U.S. infantrymen were fighting along Korea's narrow, spine-like ridges, often on a front of two to four men, the Infantry School at Fort Benning was demonstrating to its students assault by marching fire with squads on line across on the gentle, ample, pine-dotted slopes of hills along the Upatoi. Fry noted

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11 Patton, *War As I Knew It*, op. cit., p. 295.

that his book, written after the Korean War, was at odds with The Infantry School on how best to conduct the assault:[12]

> [Marching] fire is excellent if the enemy is sufficiently demoralized to permit this type of advance. However, when supporting fires are lifted and a stubborn foe continues to deliver aimed fire, this type of assault has failed on numerous occasions. This book is intended to supply a solution for situations in which a determined enemy clings tenaciously to his battle position and where attacking infantrymen must overcome aimed rifle and machinegun fire.

Fry asserts that thousands of American infantrymen met death because they had not been taught how to live in such situations. He noted that his fire and movement techniques had been successfully employed in Korea within the 2d Infantry Division and the 5th Regimental Combat Team, and that they were like the close combat methods taught to the Republic of Korea Army by General James Van Fleet--one of the 90th Division's successful commanders in World War II.

General DePuy, thinking after World War II about his experiences in the 90th Division, came to the conclusion that the U.S. Army's infantry doctrine was deficient both for offense and for defense. For attacking infantry, he devised a series of control techniques for rifle platoons--measures similar in intent to those of Fry and others--that obviated holding leader conferences in the face of the enemy, and stressed rapid advance under suppressive fire:[13]

> Of course the goal [of the techniques] was to get more soldiers involved in the fighting and to reduce the necessity of stopping to explain how two fire teams were to provide "fire and movement." That came after the war, but the impetus came from the generally poor performance of wartime squads. Often the platoon leader would give up on squads and run the platoon as one mob or as a bunch of individuals. Of course that was an act of desperation. Once the idea of operating two mutually supporting teams had taken hold then the question of how to control each fire team arises. The answer is that the fire team leader leads. He is in front and his team follows on each side in a Δ formation . . . "follow me and do as I do". . . . Gideon said the same thing: "Observe me and do likewise. . . ."

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12 Fry, op. cit., pp. viii-ix. The author staged a number of marching fire assault demonstrations for the Infantry School 1950-1951, but in 1952, in Korea with the 32nd Infantry, built his squads around two BARs, and trained them with live fire to advance by teams while suppressing.

13 DePuy, General W.E., *Changing an Army*, An Oral History, eds., Brownlee, R.L., and Mullen, W.J., Washington, DC: U.S. Military History Institute and U.S. Army Center of Military History, 1988, pp. 45-46, 108. Cf. Herbert, P.H., *Deciding What has to be Done: General William E. DePuy and the 1976 Edition of FM 100-5, Operations*, Leavenworth Papers, No. 16. Fort Leavenworth, KS., Combat Studies Institute, USAC&GSC, 1988, pp. 11-22.

> When I arrived [at the 2d Battalion, 8th Infantry, Germany, 1953)] it was just as if it was the day after World War II. Nothing had changed. The weapons were the same and the terrain was the same. . . . As I looked at the training of the battalion, which was as good as any of the battalions over there, I found that the squad level was a shambles, just like my battalion had been in World War II. . . . So, I decided to spend my time at the bottom. . . . I had an opportunity to go over and watch 2d Armored Division tank training under General Howze. In my opinion, General Howze was the best trainer in the Army. . . . Everything that he had written about how to train a tank platoon struck me as precisely the way to train a rifle squad since each of them have two operating sections or teams. So I wrote up several little booklets that we used as training manuals and doctrine in that battalion. . . .

In 1971, when he was Assistant Vice Chief of Staff of the Army, Lt. Gen. DePuy urged a large assembly of officers at Fort Benning to open their minds to new missions and new ways of training.[14] In World War I, the vulnerability of infantry had led to trench warfare; toward the end of World War II "nearly all activities were reserved for night. It was simply too dangerous to operate in the daytime." When he had commanded the 1st Infantry Division in Vietnam, 1966-1967, he worried mainly about the vulnerability of platoons: "I didn't worry much about battalions and brigades because they were okay. But the platoons were not okay, and infantry platoons in war are never okay because they turn over too fast and they don't have enough time to train. I submit that there is another reason: we really haven't helped them enough by pointing out how [to train], and what it is they are up to. What has happened is that we have over-complicated our field manuals, doctrine, and tactics while overlooking the most important aspect--training in techniques." He showed the statement from *Infantry in Battle:* **"The art of war has no traffic with rules. . . ."** He replaced that, without comment, with the following, from the Rifle Company Field Manual:

> **Fundamentals of infantry combat operations include nine principles of war and five functions of land combat. The planning, organization and conduct of all combat operations are based on these principles and functions.**
>
> **FM 7-10**

Figure III-1. The Infantry School on the Art of War, 1971

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[14] DePuy, W.E., "Applied Techniques--The Forgotten Tactic," op. cit. Col. Trevor Dupuy, in commenting on DePuy's lecture, noted that in reducing the friction-prone movements of infantry under fire to actionable technique, DePuy had created a facsimile of sound artillery training, which inculcated reliable technique, as opposed to tactics. He also compared DePuy's rationale for technique to Admiral Nelson's command methods.

He noted that FM 7-10 also contained a reference to "battle drill":

> **Battle drill is the immediate action taken by a squad or platoon to return fire and deploy against the enemy in any situation without issuing lengthy orders.**
>
> **FM 7-10**

Figure III-2. Battle Drill

But, he remarked, FM 7-10 was largely silent on the substance of "battle drill," on *techniques*, which he characterized as "the greatest problem and challenge for [infantry] leaders." By techniques, as opposed to tactics, he meant exactly the difference between "general" and "specific," or "habitual" and "situational." He continued with the following (Fig. III-3, ff.).

Techniques	Tactics
Cover	Tree, Rock
Movement	Exact Route
Overwatch	Specific Location

Figure III-3. Technique vs. Tactics

> Consider the squad and platoon. In reality, a rifle squad is 6, 7, 8 men, rarely 11; and a platoon is 25, 30, 35 men, seldom what it is supposed to be. . . . Only when all the members of a squad understand what the squad as a squad is doing and how it is going to do it, and how they fit into it, may they properly be called a squad. One way to solve this problem is to stop every five minutes and explain everything to everyone, but we know that is impossible. The problem is best solved by some kind of drill as in football practice. The specific play used is important, but what is more important is that everyone understands the overall function of that play and how to execute it. . . .
>
> Thinking solely in terms of the approach march concept--i.e., move toward, find, and assault the enemy--is outdated. Plagued by the high vulnerability of friendly troops to enemy fire, today's leader can no longer consider the assault [by marching fire] as the logical or necessary action once the enemy is found. Therefore, since the emphasis is on finding the enemy, the unit techniques employed in doing so must be . . . simple, flexible, secure, and functional, ones which even the least experienced rifleman can understand and adjust to.
>
> Start with the Fire Team. It is the leader who leads, with the others arranged slightly behind and to the flanks [Fig. III-4].

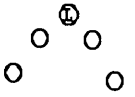


Figure III-4. Fire Team

The leader tells the others what to do, *if* he has time. If he does not have time, a cardinal rule is understood--follow me and do what I do. I run--you run. I kneel--you kneel. I crawl--you crawl. I shoot--you shoot. And so on.

You can train the squad and platoon by employing the same theories and premises used in training the Fire team.

Two teams, one following the other (as in Fig. III-5) results in a squad **travelling** formation which facilitates rapid movement, is simple, secure, and easily controlled. The squad will normally be understrength, so I have not depicted the squad leader. In fact, maybe he should be a team leader anyhow.

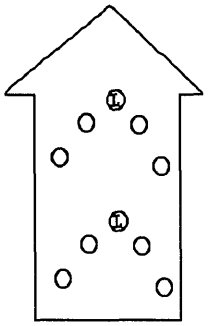


Figure III-5. Squad Travelling

While moving across open terrain, one team should drop back far enough to prevent enemy fire from effectively impacting on both teams. The trail fire team is ready to shoot to suppress an enemy for the lead team, or to move to a position from which they can do that, while at the same time the squad is continuously moving. This [Fig. III-6] is **travelling overwatch.**

Prudence demands that an infantry unit must find the enemy with the least number of soldiers. To be sure, the enemy has the advantage. He picks the place, he is entrenched, he has overhead cover, and he can see you.

Everything is in his favor, so you should send the least number of soldiers forward to find him.

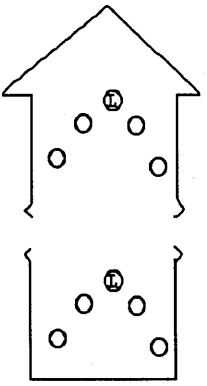


Figure III-6. Squad Travelling Overwatch

Additionally, if you think you are about to get into a fire fight, you should have at least one element in position ready to shoot. This can be accomplished by having the fire teams execute alternate **bounding** movements. One fire team (1) takes up a fixed, **overwatch** position. The other moves forward covered by its observation or fire to a position (2) from which it can overwatch the movement of the first team. Roles are reversed as soon as the advancing fire team assumes overwatch. Thus the squad advances in short protected rushes--(3) to (4), (2) to (5), and so on [Fig. III-7].

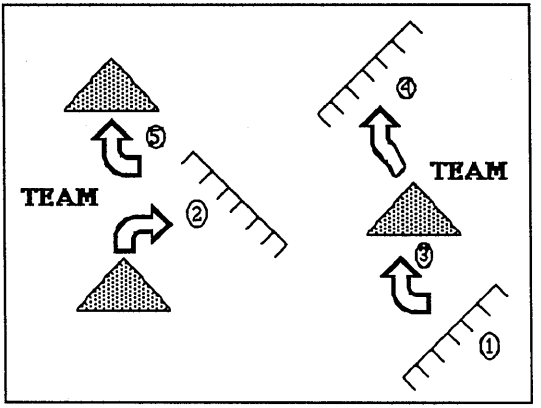


Figure III-7. Squad Bounding Overwatch

This **bounding overwatch** technique is the most secure method of movement. Speed is not sacrificed--if conducted properly.

These techniques are easily applied to a platoon as well. Three squads are arranged in column to become the platoon **travelling** formation. The squads are in close proximity for ease of control. . . . When the platoon conducts travelling overwatch, the lead fire team increases its distance from its sister fire team, which in turn increases its distance from the second squad in column [Fig. III-8].

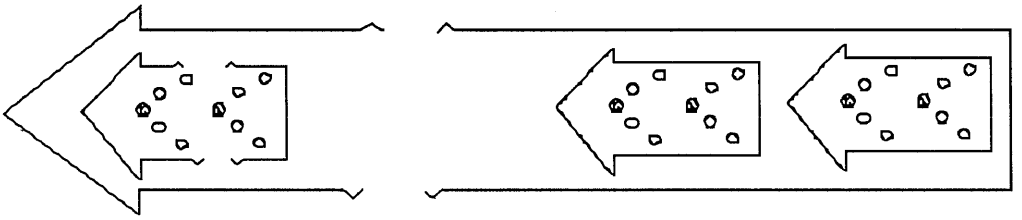


Figure III-8. Platoon Travelling Overwatch

For simplicity when conducting platoon **bounding overwatch**, consider a platoon as having three legs--three squads--and that it walks across the terrain on these three legs. For example, the 1st Squad should be in an **overwatch** position, some small hill or eminence from where it can see forward and shoot if necessary. The 2d Squad should be moving toward the next such hill or eminence, and the 3d Squad should be rejoining the column from the last position occupied [Fig. III-9].

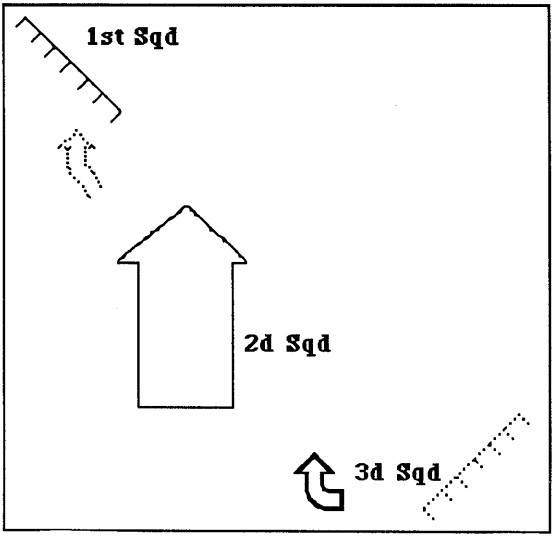


Figure III-9. Platoon Bounding Overwatch

By so doing, control and dispersion are maintained, the fewest soldiers possible find the enemy, and the platoon is always ready to react. If every riflemen understands your terms, the formations, the "plays" and their functions, then you have solved the primary problem of explanation or orders under fire. It is the *understanding* by each soldier that is important, and that *understanding* is the key to training in techniques.

DePuy closed his lecture with this slide (Fig. III-10), which addresses the perennial problem of the number of soldiers available in a squad for training, whether that training takes place on a football field or on a battlefield. Audience reaction was mixed. The Infantry School faculty was patently uncomfortable with DePuy's lack of respect for the orthodox, but the young Vietnam veterans who comprised most of the audience--former platoon leaders and rifle company commanders--were warmly enthusiastic, if sceptical that they would ever be allowed to take such liberties in peacetime training.

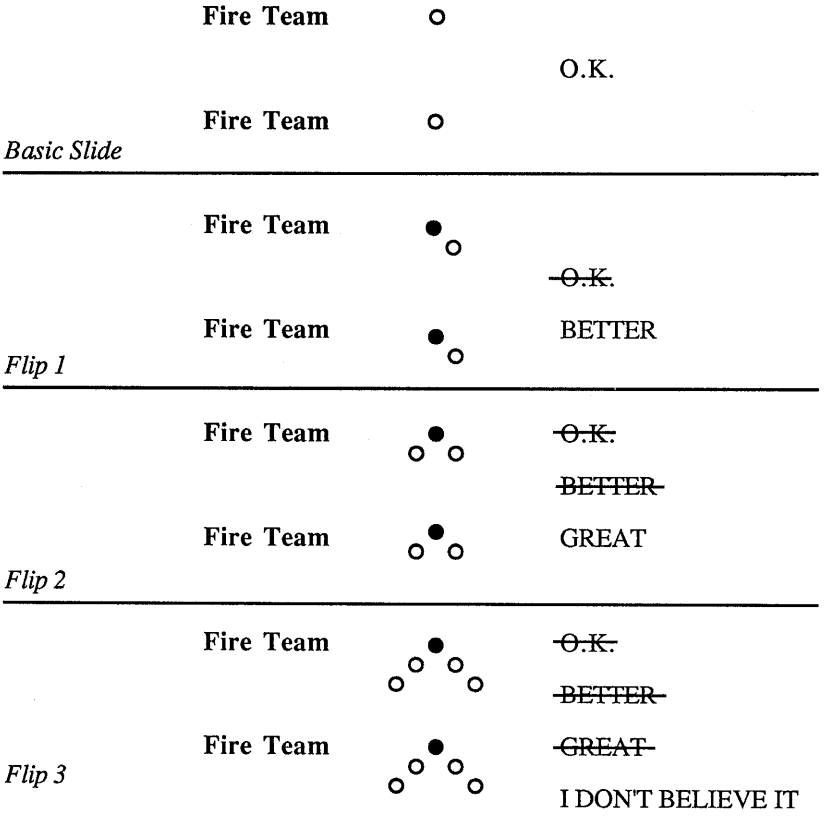


Figure III-10. Training the Rifle Squad

The odds are that General Patton would have thoroughly endorsed DePuy's techniques. General DePuy had much in common with George S. Patton; indeed, in 1945, after a session with the 90th Division's commanders on World War II's "lessons learned," Patton asked DePuy to become his aide-de-camp. There is a distinct similarity in their approach to close combat--DePuy's derived from learning in battle, Patton's from his extensive readings and field experiments, as well as his battle experience. The measures each adopted--overwhelming fire and rapid maneuver, a swift thrust through a gap or around a flank, night infiltration--evoke the concepts of Guderian and Shaughnessy. DePuy explicitly recognized that the tactical imperatives bearing on tank platoons operated on rifle squads as well. Moreover, both Patton and DePuy grasped military operations in their entirety: strategic instincts to guide operations, and sweeping flanking maneuvers or deep thrusts to be sure, but also sureness with the tactics and techniques for victory in close combat.

2. Infantry Defending

Among the lessons on the tactics and techniques DePuy learned from the Germans during World War II was the vacuity of defenses that could be seen by the enemy. McNair's AGF emphasized offensive action in its training tests and "battle inoculation" courses, but the Infantry School taught defense by fires in depth, units arrayed for continuous and progressively intensive engagement of the enemy by infantry direct and indirect weapons, and by artillery, from long range to close range, confronting him finally at the Main Line of Resistance with interlocking bands of grazing fire, and barrages of artillery and mortars along a Final Protective Line.[15] So trained, infantry officers looked first for weapon sites with extensive fields of fire, such as on the military crest of a hill, or on bottom land. The positions they ordered prepared for weapons provided for all around visibility and fire, and, time permitting, overhead cover.[16] In Korea, especially after the front stabilized and both sides resorted to extensive fortification, with a political premium on retaining control of ground, American infantrymen became accustomed to building and fighting from large bunkers, often obtrusively sited and indifferently camouflaged.

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15 Cf. "Troop Leading a Battalion in the Defense," *Mailing List*, Vol. XXIV, Fort Benning, GA: July 1942, pp. 245-266. "General Considerations of Defensive Combat," Vol. XXVI, Fort Benning, GA: July 1943, pp. 125-140.

16 Infantry fortifications as prescribed by Fort Benning looked much the same from World War II through 1973. See illustrations in *Mailing List*, Vol. XXIV, pp. 267-312. Vol. XXVI, pp. 63-96.

DePuy was at odds with both propensities, being convinced that field fortifications should primarily provide cover from frontal fire, and should be wholly concealed from the enemy. In 1973, in explaining to the Commandant of the Infantry School and the Combat Arms Training Board what he expected them to do, and why, he told of an incident toward the end of the Battle of the Bulge, in early February 1945, when his battalion had pushed forward toward the Belgian-German border against stiffening German resistance. One company had dug in one evening along the military crest of a high, open snow-covered ridge, the soldiers' exertions with their entrenching tools ringing each foxhole with "dark doughnuts in the snow." After dawn the next day, from a ridge facing them, the Germans opened fire with high velocity, pinpoint-accurate cannon, probably from *Jagdpanzer*. "It was murder":[17]

> I do not believe that infantry can survive on the modern battlefield against a modern enemy if our positions can be seen by their side. The issue . . . is field of fire, cover and concealment. The reason that I feel [so strongly] is because I just happened to see German tanks kill a lot of my soldiers. . . . [My battalion] dug in where they could be seen, and a couple of tanks on a hill opposite just picked them off one by one. They couldn't get out and run, couldn't get away. [The enemy] just walked his tank cannon right down that one company--C Company--[I had] a pretty awful, hopeless, and helpless feeling. They were dug in wrong. They could be seen . . . the lesson I hoisted aboard back in World War II is still valid for today and the future.

DePuy taught his troops to employ rear slope defenses when they could, and to dig cover and concealment when they could not. His ideas did not always agree with concepts of contemporaries.[18] DePuy tells of a clash with Army Training Test umpires when he was commanding 2d Battalion, 8th Infantry, in Germany in 1953. Because of his World War II experiences, DePuy had trained his battalion to dig defensive positions in such a way that they were wholly invisible from the front. Typically, a 2/8 Inf soldier would dig his foxhole directly behind a tree or a rock, or in the midst of a bush, with his field of fire across the front of adjacent holes similarly sited. Spoil was concealed, and great pains taken to maintain the "natural appearance" of the position as seen from the enemy perspective. Emplacements with extensive frontal views were reserved for indirect fire

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17 DePuy, W.E., Letter, Combat Arms Training Board, Fort Benning, GA, to Brigadier General Richardson (Assistant Commandant, U.S. Army Infantry School), dated 6 April 1973, subject: Visit of Lieutenant General DePuy to USACATB on 3 April 1973, transmitting a transcript of DePuy's remarks, and a copy of an article he had written for *Army* magazine, published in its March 1958 edition, describing squad movement technique. DePuy was then assigned as Deputy Commanding General, Continental Army Command, pending activation of TRADOC. Also, DePuy, W.E., *Changing an Army*, op. cit., p. 71. Taped supplement, 15 August 1991.

18 Interviews with J. Madden, who served as a platoon leader under DePuy, August 1991.

observers, or for accompanying tanks. Many of the Army Training Test umpires were veterans of Korea, and most were graduates of the Infantry School. They held that the 2/8 Infantry positions little resembled a proper defense. DePuy knew why:[19]

> [In Korea] they built big forts. When you got out in front, you could see everything. . . . The umpires who came to test [2/8 Inf] thought I was crazy. They didn't understand why I hadn't built Korean pillboxes on the military crest or at the bottom of the hill. Instead I had my guys behind rocks, trees and bushes. I wouldn't let them disturb the bushes, so you couldn't see a thing from the front. . . . All the company and platoon umpires ran back to the battalion umpire and said, "This battalion is totally unsatisfactory. They don't know how to dig in." They were also sceptical about the overwatch and bounding [in the attack]. . . .

(Fortuitously, it turned out the the Chief Umpire was a Colonel who had served in the 5th RTC in Korea, and who readily agreed with DePuy; the 2/8 Infantry passed its test.)

DePuy's field fortification techniques received a rigorous test in Vietnam. There his troops in the 1st Infantry Division were taught to erect a frontal parapet of earth constructed of spoil from the foxhole, camouflaged with vegetation, with partial overhead cover as well. In 1967, shortly after DePuy's departure from command of the Big Red One, 1st Battalion, 18th Infantry, dug in after that fashion, defeated an all-out attack by a regiment, with an enemy-to-friendly mortality ratio of 198 to 1.[20]

C. THE POINT OF THE OPERATIONAL ARROW: THE RIFLE SQUAD

Table III-1 traces U.S. Army tinkering with the Table of Organization and Equipment (TO&E) for the infantry rifle squad from the end of World War I up to the mobilization for Vietnam. Half the changes occurred in the context of World War II. The Army, from institutional sensing of a basic flaw, frequently--perhaps frantically--revised the composition of the rifle squad just before, during, and immediately after wartime.[21] The data portray a progressive raising of rank among squad members, reflecting the

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19 DePuy, *Changing an Army*, op. cit., p. 108.

20 Ibid., p. 110.

21 In the foregoing table, the size of the squad exceeds the number of weapons in the TO&Es of 1938 and 1940 because the Assistant AR/Ammo Bearer was authorized a pistol; and in the TO&Es of 1962 and 1963, because corporals within each fire team were armed with an M70 grenade launcher and pistol. Ney, V., *Organization and Equipment of the Infantry Rifle Squad: From Valley Forge to ROAD*, CORG-M-194, Fort Belvoir, VA: Technical Operations, Inc., Combat Operations Research Group, for U.S. Army Combat Developments Command, January 1965, pp. 37-69. Give or take a few men, the strength of the rifle squad has been about the same as the Roman tent- and mess-unit of eight legionnaires, *contubernia*, ten of which constituted a century. Cf. Grant, M., *The Army of the Caesars*, New York: Charles Scribner's Sons, 1974, pp. xxi,xxxii, 299, 334.

Army's search for heightened levels of leadership and experience. Paradoxically they show a steady decrease in numbers of rifles, albeit rising firepower overall from added automatic weapons, grenade projectors, and the squad's own"arms room" of pooled weapons. They also evince doctrinal vacillation on the issue of tactical subdivisions, or teams within the squad.

Table III-1. Major Changes to the Rifle Squad TO&E, 1920-1963

Year	Size	NCOs	Rifles	AR	Teams
1920	8	1	7	1	—
1938	11	2	9	1	—
1940	12	2	12	—	—
1942	12	2	10	1	3
1943	12	2	11	1	3
1944	12	2	11	1	3
1945	12	2	11	1	3
1945	12	3	11	1	3
1947	9	3	8	1	—
1950	9	3	8	1	—
1953	9	6	8	1	—
1955	9	7	8	1	—
1956	11	8	9	2	2
1960	11	7	9	2	2
1962	10	7	6	2	2
1963	10	7	6	2	2

The doctrine promulgated immediately after World War II included a stricture against dividing the squad for any reason, and a prescription that maneuver should be by whole squads within the rifle platoon.[22] In 1947 a smaller, unitary squad was ordained, much like the pre-war squad with a bit more rank. The rationale given was "lessons learned" from World War II: Patton's views; plus anticipation that the reconnaissance

22 In addition to the European Theater General Board, there was an influential Army Ground Forces Infantry Conference, June 1946 (the O'Daniel Board), that codified "lessons" from the war.

mission would be performed not by infantry scouts, but by specialized air and land units; and, of course, the prospect of nuclear warfare:[23]

> Combat experience proved that it was difficult for a squad leader to control and direct more than eight other men in battle and technical developments in weapons indicate greater dispersion in future warfare.

The Army fought in Korea with the nine-man, one-team squad--although, as has been observed above, units such as the 2d Division, the 32d Infantry Regiment, and the 5th RCT organized their squads into two fire teams, each with one BAR. The "lessons learned" from that war were many, but among them was the necessity for fire and movement within the squad, and for subelements of the squad to use on independent missions, particularly for security and reconnaissance; this led to authorizations for two more corporals for the squad in 1953 (Assistant ARmen were promoted) and an additional 3 corporals in 1955 (three "senior rifleman" positions were created).

In 1956, as part of its Reorganization of the Current Infantry Division (ROCID), the Army adopted a squad organized around a squad leader and two fire teams--except for rank, identical to the informal alignments used during the Korean War, referred to above. In 1960 the M-1 rifle was replaced with the M-14, firing the 7.62-mm NATO-standard ammunition, and the BAR was supplanted by a version of the M-14 with a bipod and an automatic-fire selector-switch. In 1962, the M70 40-mm grenade launcher was incorporated into the squad. The 1963 Reorganization of the Army Division (ROAD) rifle squad TO&E affected rank of NCOs, but not teaming. Improved, man-portable individual weapons such as the Claymore electrical mine, the M-72 Light Antitank Weapon (LAW), and a high-fragmentation hand grenade added to the squad's defensive and offensive firepower. Eventually, the lighter M-16 rifle replaced the M-14.

The Army fought in Vietnam with the ROAD rifle squad TO&E of two fire teams and a squad leader. However, few Vietnam veterans can recall employing fire teams as such. This was so because the terrain, and the tactical exigencies of finding the wily foe, usually aligned the squad in single file. Further, experience levels among leaders of the squad was low; early in the war, one experienced NCO per squad was usual, but toward its end, one experienced NCO per platoon was normal. By 1970, some rifle platoons were composed entirely of men who came into the Army in the same year: the second lieutenant from OCS, those draftees who were sent through a leadership training course en route to

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[23] Ney, *Organization and Equipment of the Infantry Squad*, op. cit., p. 54, quoting a report of Army Field Forces, a lineal descendant of AGF.

Vietnam--known to the troops as "shake and bake" NCOs--and the draftees who became riflemen, none of whom could expect to remain long enough to be promoted to a "senior rifleman" position. Officers were conscious of high-level concern over needless casualties, and were under suasion to employ heavy supporting fires rather than to assault enemy positions, a tactic accurately described as less "fire and maneuver" than "maneuver and fire."[24]

During the 50s and the 60s, the Army had undertaken a far-reaching examination of the behavioral and social characteristics of infantry squads and platoons, and learned a great deal, although the urgencies of the war foreclosed acting on findings. Evidence accumulated from a broad range of studies and tests that rifle squad design--its organization, rank structure, and equipment--was far less significant in its battle performance than human factors, particularly training and motivation, and therefore that much of the Army's preoccupation with squad TO&E had been misplaced. For instance, field tests at the U.S. Army Combat Developments Experimentation Command (CDEC) analyzed various sized squads ranging from 7 to 15 soldiers, but found that there were no important differences among the tested organizations in ability to accomplish mission. However, these tests showed that as squad size *decreased*, movement was facilitated, and fire efficiency (a measure not only of hits, but also of suppressive effect) *increased.* Surveys of small unit combat actions in Vietnam in 1966 and 1967, as well as in Korea and World War II, confirmed that squad size affected neither tactical success nor squad endurance, but that the presence and use of automatic weapons was crucial for success. These surveys led to the conclusion that the maximum span of control of any one infantry leader is seven soldiers. Further, the same surveys revealed, there was a natural tendency for individuals to pair off within squads, and that whatever Army doctrine was at the time, effective squads fought *de facto* as fire teams.[25]

Among the earliest guidance provided by General DePuy to TRADOC was to cease fine-tuning the size and equipment of the rifle squad, and to concentrate on improving its combat performance--he pointed out that the Army's forthcoming Infantry Fighting Vehicle [Bradley] and its promised new utility helicopter [Black Hawk] had been justified as carriers of an 11-soldier squad, so he expected the Army would have an 11-soldier squad for a long time to come. He was in any event convinced that improving squad

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24 Griffith, Paddy, *Forward Into Battle*, Novato, CA: Presidio Press, 1991, pp. 156-157.

25 *Infantry for Battle in Europe, 1978*, op. cit., pp. 15-16. The principal source cited is *Infantry Rifle Unit Study (IRUS-75)*, Fort Benning, GA: U.S. Army Combat Developments Command, Five volumes, 1968-1970.

effectiveness was the central issue before TRADOC.[26] Initially DePuy wanted the Combat Arms Training Board and the Infantry School to form a demonstration platoon that would travel throughout the world to show infantry units proper techniques for fire and movement. Ultimately, he was persuaded that a new training technique being promoted by the Combat Arms Training Board, Tactical Engagement Simulation (TES), offered a much more powerful method for encouraging adoption of proper technique within combat arms units than a demonstration, or even widely distributed televised or filmed performances.

D. BATTLEWORTHY TRAINING: TACTICAL ENGAGEMENT SIMULATION

In 1971, General W.C. Westmoreland, Chief of Staff of the Army, directed that a board of officers consider ways and means of conducting training both to motivate and to teach soldiers--what General Westmoreland termed "dynamic training."[27] The Board for Dynamic Training (BFDT), convened under the Army General Staff supervision of the Assistant Vice Chief of Staff, Lieutenant General W.E. DePuy, drew members from divisions throughout the Army, both from the active component and from the reserves, and elicited from them both criticisms of contemporary training methods, and recommendations for amelioration.

One consistent issue put to the BFDT was the difficulty of creating tactical "realism," particularly in conducting exercises with live firing, that grew out of shortages of ranges and ammunition, restrictions imposed by concern for troop safety, the high cost of field exercises, and the growing environmental constraints on the latter. In examining proposed solutions, BFDT was attracted to two possible applications of contemporary technology:

- The first [since termed "subsistent Tactical Engagement Simulation"][28] consisted of instrumented ranges or maneuver areas for actual military vehicles and personnel in which engagements are singly simulated by direct fire

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26 DePuy, W.E., Letter, CATB, 6 April 1973, op. cit.

27 The author served as the President of the Board for Dynamic Training, and was first President of its successor, the Combat Arms Training Board.

28 The term "subsistent" is antonymic with "virtual," the descriptor for the most recent form of TES that means "being such in essence or effect, though not formally recognized or admitted." Virtual TES is presently based on vehicular simulators, occupants of which view computer generated imagery of battle scenes. Networked with other simulators, friendly and enemy, on a synthesized battlefield, the simulators may act cooperatively or antagonistically, as the occupants choose. In subsistent TES, the vehicles are real, as is the terrain, and only weapon effects are synthetic. The first entry of Roget's *Thesaurus*, "1. Existence" links "subsistency" with "being" (L. *esse*) [1.1]; the second entry "2. Nonexistence" relates "virtual" to "unreal."

emulators, such as focused directed-energy emitters, microwave or laser, enabling two-sided, free-play tactical exercises, or gunnery training relatively unfettered by safety regulations.[29] The central concept was reward and punishment for tactical performances through real-time casualty assessment, and portrayal of near-miss to evoke suppression. (In briefing its final report, BFDT illustrated such a subsistent TES mechanism with a laser mounted on an M-16 rifle that "hit" and dropped a standard pop-up silhouette target positioned across the room.)

- The second was a means of training combat arms commanders and staffs then referred to as "battle simulation" [now termed "constructive TES"] a command-post exercise driven by a board game, computer model, or other construct of a two-sided battle, amenable to interaction among members of a command group, in which engagements are aggregated and outcomes used to generate an evolving tactical situation.[30] Again, the central concept was to pit the trainees against a sentient enemy, and to exact penalties for tactical missteps, or to reward tactical finesse, via casualties inflicted on one side of the other.

In December 1971, General Westmoreland, Chief of Staff of the Army, accepted BFDT's recommendation for establishment of a successor, permanent Combat Arms Training Board (CATB) to pursue these and other initiatives. CATB was charged with improving communications between schools and units for training, and for identifying other ways and means of improving training in those branches where improvements were most needed: the infantry, armor, artillery, and air defense. TES became one of its early objectives.

1. Subsistent TES

CATB promptly pursued development of a reasonably priced family of interactive laser weapon simulators and detectors capable of emulating infantry and armor close combat, devices that came to be known as the Multiple Integrated Laser Engagement System (MILES, Latin for soldier).[31] Regrettably, despite the CATB's best efforts, MILES followed the usual twelve-year development cycle. The Army did not begin

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29 *Final Report of the Board for Dynamic Training*, Six volumes. Fort Benning, GA, 17 December, 1971, Annex J, pp. J-934 and J-936. Cf. Gardiner, K.W., Fraser, E.C., Pressman, G.L., and Northend, C.A., *Direct Fire Simulation System*, Final Report for Combat Development Experimentation Command, Contract DA-04-200 AMC-1884 (X), October 1966.

30 *Final Report of BFDT*, op. cit., p. J-938.

31 Arthur D. Little, Inc., *Technical Evaluation of Four Dynamic Training Devices*, Final Contract report for the U.S. Army Combat Arms Training Board, Contract Number DAHG 19-72-C-0032, February 1973.

distribution of MILES until 1980, and it was not in general use until the mid-1980's; MILES, however (with supplemental instrumentation) enabled the establishment of the National Training Center (Fort Irwin, CA), and subsequently the Joint Readiness Training Center (Fort Chaffee, AR), and the Combat Training Center (Hohenfels, Germany).

CATB, faced with MILES' dauntingly long gestation, jointly sponsored with the Army Research Institute for the Social and Behavioral Sciences (ARI) a series of field experiments with troops using optical engagement simulators, in which the "firer" sighted through a telescopic weapon sight to read a number affixed to an "enemy," the power of the telescope and the size of the number roughly replicating the effective range of the "firer's" ordnance. This training technique, originally called "situational training," specifically addressed infantry close combat, and was demonstrated to be remarkably more effective than previous techniques; literature and materiel to implement it was labeled Squad Combat Operations Exercise (SCOPES), and fielded in 1973. Successful demonstrations of learning with SCOPES led to its expansion to tanks and antitank weapons, and to an overall optical ensemble called REALTRAIN (1975).[32]

REALTRAIN was limited to company-level combat, and was thought to be expensive in terms of controllers and communications equipment for the latter. Nonetheless, REALTRAIN made it apparent that Tactical Engagement Simulation (TES) was a training method that came to grips with the realities of close combat for combined arms, and could reliably teach leaders and soldiers alike how to behave so that they could accomplish a tactical mission with minimal "casualties." As importantly, troops liked REALTRAIN, displaying enthusiasm throughout their exercises even in poor weather and other adverse circumstances.[33]

One example of TES that General DePuy found compelling emerged from field tests at the Combat Development Experimentation Command, which had the most effective subsistent TES equipment available in the 1970's: laser-weapon-effect simulators, coupled with precise position locaters, all linked to large computers for assessing casualties and

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32 Mathers, B.L., Shriver, E.L., Root, R.T., Word, L.E., Whitter, D.W., and Griffin, G.R., *Training Manager's Handbook for Situational Training*, Final Contract report for ARI, Contract DAHC 19-73-C-0017, November 1973. Hayes, J.F., Griffin, G.R., and Mathers, B.L., *Development of Performance Based Proficiency Tests for Combat Arms Skills*, Final Contract Report for ARI, Contract Number DAHC 19-73-C-0016, May 1974. Shriver, E.L., Mathers, B.L., Griffin, G.R., Jones, D.R., Word, L.E, Root, R.T., and Hayes, J.F., *REALTRAIN: A New Method for Tactical Training of Small Units*, ARI Technical report S-04, December 1975.

33 The documentation on the effectiveness of TES is extensive. Cf. Sulzen, R.H., *Annotated Bibliography of Tactical Engagement Simulation 1966-1984*, Technical Report 725, Monterey, CA: ARI Field Unit, October 1986.

recording behaviors. DePuy often referred in his talks before TRADOC and other Army audiences to the CDEC evaluation of the frontal-parapet foxhole, a series of evaluations called PARFOX.[34] For PARFOX, CDEC built two sets of foxholes:

- One set of five foxholes were built, on the Army standard pattern, for a wide sector of observation and fire. One foxhole on each flank was dug for one defender; the three in the center were designed for two occupants.
- Some distance away, a second set of seven foxholes was constructed. Six of these were one-man foxholes, each with a frontal parapet, or raised berm of sandbags and dirt, that provided cover and concealment from direct, frontal fire, but confined observation and fire to a single direction across the front of fellow defenders. (These followed the design developed in the 1st Infantry Division in Vietnam under DePuy's command, 1966-1967.) The seventh foxhole was large enough for two occupants and was located in the center of the position; it was of a novel design, having its frontal parapet split in the center to afford either occupant two directions of fire, one to his right, and one to his left.

Each set of foxholes was attacked repetitively by platoons of 23 soldiers, the number dictated by available CDEC instrumentation. Leaders of attacking platoons were free to choose their tactics, and the measure of success was elimination of the eight defenders, and seizure of their position. The foxholes on the two test ranges were arrayed roughly on line about 30 meters apart, with a clear field of fire for some 200 meters to the front, something like Figure III-11.[35]

Some 72 attacks were conducted against each eight-man position, those numbers being deemed sufficient to compensate for differences in weather or light conditions. The attackers could use both direct and indirect fire to support their attack, and all had the platoon "weapons pool" available. The frontal parapet design yielded significantly higher exchange ratios of attacker to defender, as shown in Table III-2.

One reason for these differences was the relative efficiency of the attackers' fire in suppressing a defender when the latter had no parapet to cover his head and shoulder; "suppressed posture" means "ducking" or lowering head and shoulders from firing position to avoid being hit (Table III-3).

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34 Combat Developments Experimentation Command, Evaluation of the Frontal Parapet Foxhole, Final report CDEC Experiment FCO33, October 1976.

35 Figures are reconstructions of visual aids used to support a lecture at the Army War College by the author, 21 January 1977. Gorman, P.F., *Trends in the Army Training System*, MS.

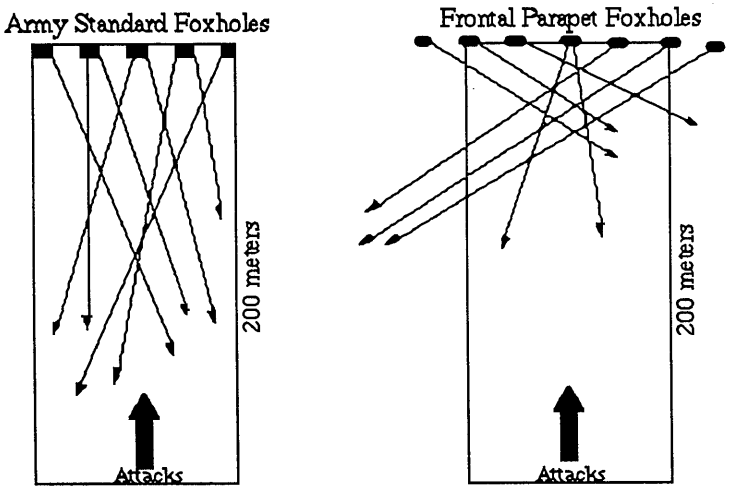


Figure III-11. PARFOX Trials at CDEC

Table III-2. Casualty Exchange Ratio

Type Foxhole	Attacker/Defender
Standard	2.9
Split Parapet	5.1
Frontal Parapet	6.2

Table III-3. Percent of Time Defenders in Suppressed Posture

Type Foxhole	Standard	Split Parapet	Frontal Parapet
Time Suppressed	48.9	38.4	34.6

As an illustration of the importance of instrumentation in TES, CDEC was able to record the azimuth on which each defender fired to initiate an engagement. CDEC had theretofore completed a series of tests that had shown that 90 percent of all targets engaged by defenders were moving at an angle to the firer, that is, not advancing head-on, and that these targets were usually exposed six seconds or less. Hence, one CDEC hypothesis in the PARFOX series was that the data would show a high percentage of nonfrontal

engagements; indeed, these did, even for the standard foxhole, in which the occupants had complete freedom to engage to their front. Accordingly, CDEC reported angle of engagement (Table III-4) showing that the Frontal Parapet accentuated a natural tendency. General DePuy used these data to demonstrate that adherents of the "Standard Foxhole" were paying in vulnerability for a degree of freedom to observe and to fire that soldiers simply could not use.

Table III-4. Mean Angle° from Direct Front for Defense-Initiated Engagements

	Standard	Split Parapet	Frontal Parapet
Day	20.1	27.1	32.1
Night	21.8	26.5	37.7

But what was more interesting to DePuy was serendipitous data on the attackers, who from iteration to iteration learned more and more about the task confronting them, and devised better ways of getting the job done. One comparison shows 67 percent "mortality" among attackers for their first 18-day attacks, contrasted with 47 percent "mortality" for their final 18-day attacks. What was going on in that platoon was experiential learning of the sort reported by DePuy in the 90th Division. Extrapolating from one rifle platoon to nine in an infantry battalion, the effect of learning during all trials, day and night, equated to 72 soldiers who lived to fight another day--72 casualties avoided, or three platoons of replacements not required.

Most interesting to General DePuy, however, was CDEC's relayed analysis of what tactics worked best. Tactics elected by each platoon leader for each trial were grouped according to employment of his three squads, as shown in Table III-5.

Table III-5. Squad Missions Elected by the Attacker

Tactic 1	1 base of fire, 2 maneuver
Tactic 2	1 +AT wpns base of fire, 2 maneuver
Tactic 3	2 base of fire, 1 maneuver
Tactic 4	3 squads advance on line

In daylight attacks, these tactics succeeded as indicated in Table III-6.

Table III-6. Percent of Successful Attacks (No. Attempts)

Tactic	Standard		Split Parapet		Frontal Parapet		Total	
1	43	(7)	9	(11)	25	(8)	25	(26)
2	67	(3)	33	(3)	67	(3)	56	(9)
3	100	(6)	67	(3)	86	(7)	88	(16)
4	50	(2)	0	(1)	0	(1)	33	(3)

By far the most successful tactic was to use two squads as a base of fire to assure suppression of the defenders, and to advance with only one squad. General DePuy often cited CDEC's PARFOX experiment, pointing out that the only one out of four of the platoon attacks with two up and one back (half the attacks in the sample cited) were successful, while the tactics heavy on suppression (two back, one up) succeeded nearly 9 out of 10 times.[36] He stated emphatically that he would attack a dug-in enemy with a maximum volume of suppressive fire and the smallest possible maneuver element. Rommel, he noted, described just such tactics for penetrating a fortified position in the book he published before World War II, *Infantry Attacks*! [37]

There was another example often cited by DePuy of subsistent TES teaching effectively: the "3 × 5 Platoon Test" at Fort Hood, TX, in which the TRADOC Combined Arms Test Agency (TCATA) employed a laser-based subsistent TES system to compare the combat effectiveness of a tank platoon designed around three tanks with that of the standard 5-tank platoon.[38] DePuy found the test results interesting because on the one hand doctrine for the 5-tank platoon had been thoroughly tested, and all participating soldiers had been trained well in its tactics and techniques, while on the other hand, there was no U.S. doctrine whatsoever for a 3-tank platoon, so that the participants themselves had to figure out how to fight in that configuration. The test involved 2 weeks of field exercises

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36 E.g., DePuy, *Changing an Army*, op. cit., pp. 10, 86.

37 Rommel, E., *Infantry Attacks*, London: Greenhill Books, 1990. DePuy was referring to the penetration of the Mount Cosna position, August 1917, pp. 157 ff. Rommel's description of the operations of the Württemburg Mountain Battalion in World War I are remarkably like those in DePuy's accounts of his 1st Battalion, 357th Infantry in World War II: personal attention of the commander to provisions for suppression, wide envelopments, penetrations of enemy defenses by the battalion marching in column, night attacks--albeit against Romanians, French, and Russians, 27 years before DePuy's battles.

38 Blalock, D.N., and Mullis, H.E., *Impact of Realism in Field Training Exercises*, Fort Hood, TX: TRADOC Combined Arms Test Agency, November 1976. Charts are adapted from those used in the author's lecture at the Army War College, January 1977, op. cit.

involving defense by day and by night against an attacking force outnumbering the defenders by four to one. Test design was as shown in Table III-7.

Table III-7. Design of 3 × 5 Tank Platoon Test

Platoon	Week 1	Week 2
A	3 tanks	5 tanks
B	5 tanks	3 tanks

Both platoons of the pair A and B were from one of the line battalions at Fort Hood. Both defended at odds of 4:1, but in Week 1 Platoon A did so with three tanks, and then its remaining section of two tanks joined it for Week 2; conversely, Platoon B fought during Week 1 with all its five tanks, then sent its section of two tanks back to garrison for Week 2. These exercises were repeated a number of times.

The outcomes surprised TCATA and delighted DePuy. During the first defense conducted by a 3-tank platoon, *all* friendly tanks were eliminated. However, improvements were pronounced in the 2d and 3d defenses, and by the 4th defense, *all friendly tanks survived, and all attackers were "killed."* DePuy saw this as "battle seasoning" of a sort; TRADOC briefers used the term "experiential learning."

Further to the point of "experiential learning," TCATA pointed out that the casualty exchange ratio of Attacker Casualties: Defender Casualties for defenses conducted during Week 1 were approximately equal for both platoons, and less than 1. But in the second week, that of the 3-tank platoon soared to 4:1, while the 5-tank platoon was 1:1. TCATA noted that the two "novice tanks," the section added to Platoon A for Week 2, were markedly inferior in gunnery technique, were among the first casualties in the battles they fought, and otherwise exerted a dead weight on their platoon's effectiveness. Moreover, General DePuy arranged for a well-experienced Israeli observer, an officer who had fought with 3-tank platoons during the 1973 War, who told TCATA that the tactics and techniques he observed in Platoon B were essentially those he had used.

These results led TCATA to recommend to General DePuy that laser-aided TES, supplemented by live-fire battle runs, be incorporated into armor training Army-wide, an endorsement that TRADOC used to advocate funding of the MILES program in Washington and to argue for establishment of the National Training Center at Fort Irwin.

2. Constructive TES

The Board for Dynamic Training found that while subsistent TES depended on technology and techniques yet to be developed, constructive TES already was in use for training and experimental purposes. In 1969, the Infantry School, responding to requests from commanders in Vietnam, had begun to conduct exercises in which Advanced Course students played roles as members of an infantry battalion battle staff in a helicopter above a helicopter-borne insertion of their unit into a defended landing zone. The simulation was referred to as the Combined Arms Tactical Training Simulator (CATTS). ARI joined with the Infantry School to assess training effectiveness in CATTS, and established that the simulation, crude as it was (a wooden mockup of a helicopter propped over a terrain model) could teach battle staff integration.[39] By 1971, when the BFDT was in session, the Infantry School had stated a requirement for computer generated imagery to replace the terrain model, so as to provide a broader repertoire of scenarios for the participants. CATB, working with the Infantry School, enlarged upon this requirement, and funded requisite research and development. After the Arab-Israeli War of 1973, per General DePuy's guidance, CATB focused developers on a scenario involving defense of a sector in the Sinai Desert against an armored force crossing the Suez Canal, and attacking eastward out of Egypt. By 1976, a computer-based version of CATTS was in operation. CATTS simulated the actions of friendly and enemy units in combat in a real-time, free-play battle. CATTS moved elements on both sides in accordance with orders from the respective command posts, and calculated intervisibility and detection probabilities, weapon-to-target ranges, and the results of engagements. It maintained records on the status of personnel, equipment, ammunition, and fuel for both sides. Speed of movement, line of sight, and weapons effects were influenced by the unit's personnel and equipment status, and by weather, type of terrain relief and soil, and, importantly, by suppression. General DePuy directed that CATTS be relocated to Fort Leavenworth, and that the Combined Arms Center there use CATTS to train battalion commanders and their staffs from all over the Army, active and reserves, and further, to incorporate battle simulation into the curriculum of the Command and General Staff College.

By 1977, CATTS had been used to train battle staffs from forty battalions stationed in CONUS. Observations of those units among them rated C1 under the official readiness

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39 Olmstead, J.A., Christensen, H.E., and Lackey, L.L., *Components of Organizational Competence: Test of a Conceptual Framework*, Technical Report 73-19, Alexandria, VA: Human Resources Research Organization, 1973.

reporting system revealed wide differences in operational effectiveness. For example, two units virtually indistinguishable before their CATTS training in terms of ratings, or the experience of the commanders and staffs, were assigned identical missions: defend against 4:1 odds. One commander came out of the engagement a clear winner, with 22 surviving tanks, having cut his opponent down to 12. The other commander emerged an equally clear loser, with 5 surviving tanks, facing an enemy with 35 remaining.

In 1973, when DePuy assumed command of TRADOC, constructive TES was virtually unused in unit training, and only CATTS was under development for an institutional application. When he left command in 1977, TRADOC's Combined Arms Center (CAC) at Fort Leavenworth had fielded not only the computer-based CATTS, but two manual, or board-game simulations: PEGASUS for battalion and brigade battle staffs, and FIRST BATTLE for division and corps staffs. In addition, CAC had sponsored CAMMS (Computer Assisted Map Maneuver System) which permitted remotely located brigades and battalions to exercise together via telephone lines linked to a large, time-shared computer, and the prototype of BATTLE (Battalion Analyzer and Tactical Trainer for Local Engagements) that utilized a map and a minicomputer. Moreover, through constructive TES, CAC had become actively involved in unit training throughout the Army.

Marshall's desideratum, that the faculty of Leavenworth periodically train with the force, had begun to be achieved.

3. Readiness for the First Battle of the Next War

a. Armor Close Combat

Shortly after General DePuy assumed command of TRADOC, Egypt and Syria attacked Israel (October 1973), providing the world a glimpse of the devastating power of modern weaponry. DePuy saw in that war an opportunity for TRADOC to learn how to fight outnumbered and to win, and he directed intensive study of the Israeli experience by all in TRADOC, especially his trainers. Following is an excerpt from one TRADOC staff analysis for General DePuy, dated 8 January 1974:[40]

> Israeli tank commanders hit, at ranges up to 3000 meters, Arab antagonists apparently trained to fire only after closing to 800-1000 meters, and incapable of burst-on-target adjustment or any other accommodation to first round miss.

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40 Deputy Chief of Staff for Training and Schools (DCSTS), "How to Win Outnumbered," Fort Monroe, VA, 8 January 1974. The author was then DCSTS, and wrote the paper.

The following table summarizes four battles of the Yom Kippur War drawn from post-action American reports:

Israeli Posture	Total No. Tanks, I+A	Tank Odds I:A	Tank Exchange Ratio:I:A
Night Attack	870	1:2	1:6
Defense	180	1:1	Arabs wiped out
Defense	700	1:6	1:6
Defense	110+	1:2+	1:50+

Altogether, half the participating tanks were casualties; the Arabs lost more than 800, the Israelis less than 100. These statistics provide three points of interest: (1) Materiel was not determinant; in fact, in the last cited combat the Israelis were manning captured Soviet tanks, so that materiel on both sides was identical. (2) These battles surpass, in numbers of tanks engaged, any (recent?) experience of American armor. (3) The outcomes confound U.S. Army doctrine and training techniques, in that were we to stage a war game or maneuver to try to learn how to fight such battles, the side playing the Israelis would have lost each, and the exchange ratios would have been exactly reversed.

In our Field Manual 105-5, Maneuver Control, we teach that when unit's casualties approach 40 percent, probability of its performing mission approaches 0 percent (p. 177). Yet Israeli tank battalions are known to have slugged on to sweep the field despite losses of 50 percent or more. We also teach that:

> "For friendly forces advancing with a combat power superiority of 5 to 1, losses to friendly forces will be about one-fifth of those suffered by the opposing force . . . when tanks maneuver against tanks, the losses are computed in the inverse ratio of participating tanks of the opposing forces. . . ." (pp. 114, 123, 173).[41]

FM 105-5 is mute on how the umpire would control a night action at any range. And, as we have seen above, that FM prescribes that even when the umpire chooses to adjudicate a fire duel, he must apply a naive linear ratio derived from numbers of tanks on each side. This doctrine is the product of our World War II experience, when we prevailed because we overwhelmed the Germans with tanks. Our doctrine presumes friendly superiority of numbers; we train accordingly in the field. . . .

The paper went on to present a bleak picture of manning and training in U.S. tank units, and concluded with a series of recommendations:

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41 Reference is to the edition of FM 105-5 of 29 December 1967, the direct descendant of the umpiring manual authored by McNair himself. Nearly identical wording appeared in the edition of December 1973, op. cit., pp. 6-13.

- Adopt TES training techniques--based on either a foreign-built laser system or the CATB's American-made MILES--for pitting tank units against tank and antitank units, in day and night combat.
- Use TES to develop a performance criterion for mounted combat.
- Link tank gunnery status directly with the readiness reporting system.
- Train a cadre of Master Gunners--senior NCOs with the Armor School's training and stamp of approval. Seed the force with these experts, and refurbish their skills and knowledge semi-annually.
- Reward armor NCOs serving as tank commanders, and meeting gunnery performance standards, with proficiency pay.
- Select tank commanders from the most capably performing NCOs, and weed them ruthlessly and often.

This particular paper, in General DePuy's hands, led directly to the actions that culminated in the National Training Center, in high priority on MILES development, in the establishment of the Master Gunner's Program at Fort Knox, in intense TRADOC scrutiny of tank gunnery training and related standards, and in revision of the Armor Branch enlisted Military Occupational Specialities.

One action directed by General DePuy himself employed constructive TES to advantage: he asked his analysts to determine from study of their models the average threat that a tank company team commander might have to face were war to break out in Central Europe. He gave Figure III-12 to modelers and tasked them to analyze the outcome of the first battle of the company team under two conditions: first, assuming that its crews were fully and recently qualified on USAREUR's ranges, and second, assuming that their last training had been 3 months or more previous.

The two assumptions were derived from data, presented to him by the TRADOC staff from tests in Europe, that the speed and accuracy of weapon system crews declined by at least 25 percent over a period of 3 months. Hence, under the first assumption, the modelers credited all the team's weapons with full effectiveness. Under the second assumption they degraded time to engage and accuracy for each system to 75 percent of full effectiveness.

The models demonstrated that under the first assumption the team commander could expect to win, and fight another battle, but that under the second, he lost abjectly.

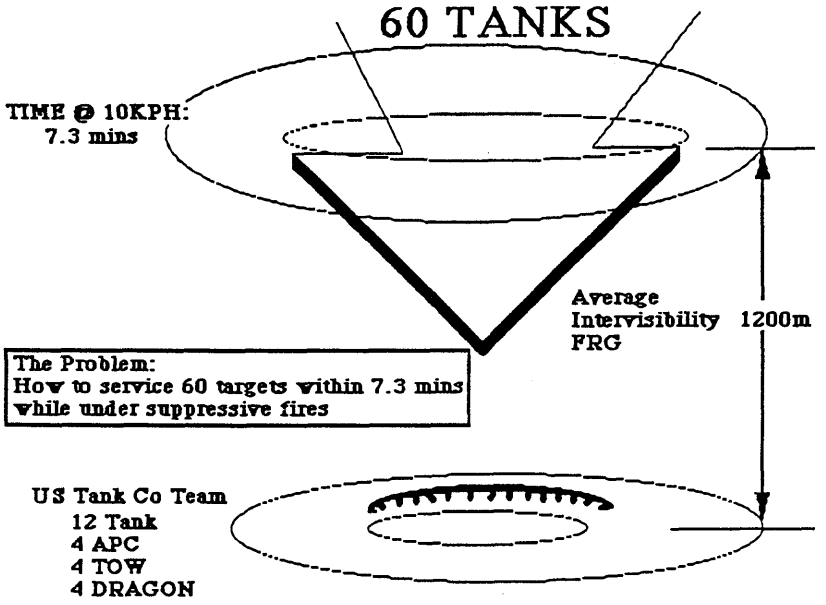


Figure III-12. Target Servicing Problems

DePuy used a diagram like that above to illustrate the "Target Servicing Problem," the challenge facing the company team, and to argue for more attention to what he termed "real readiness for the First Battle of the next war."

With TRADOC support, U.S. Army Europe began a steady upgrade of tasks, conditions, and standards for gunnery in its tank battalions. In 1976, TRADOC and U.S. Army Europe set up a demonstration, using live-fire against an automated target array, that demonstrated that a well-trained company team could in fact solve "the target servicing problem." At that conference, General DePuy expressed TRADOC's admiration for the improvement of tank gunnery that USAREUR had recorded from Calendar Year 1975 to Calendar Year 1976 (Table III-8) and expressed confidence that further improvements, specifically firing that combined gunnery with tactics, could produce even higher readiness for close combat:

Table III-8. USAREUR Crew Qualification Firing

	CY 75	CY 76
	Percentage	
Total Hits	60	75
First Round Hits	38	66

b. Infantry Close Combat

A second analysis of the War of 1973, addressing infantry training, reached DePuy toward the end of January 1974.[42] This paper advocated using long range antitank weapons forward to overwatch tank attacks, as Rommel advocated, and argued that the mounted rifle squad should be divided into a carrier team (infantrymen who invariably fought mounted) and one dismounted fire team [infantrymen who sometimes fought mounted, sometimes dismounted, but always with support of the carrier's gun(s)]. "This concept might enable us to reduce the [mounted] infantry squad to seven or eight men, and utilize vehicle capacity for additional weapons, particularly antitank weapons." It called for the Armor School to take the lead in developing a single training evaluation for a combined arms mounted battalion. It argued that infantrymen, as well as engineers, should be trained to emplace antiarmor mines, "our most plentiful antiarmor weapon as far as stocks are concerned. . . ." And it made a case for flooding the battlefield with large numbers of Light Antitank Weapons (LAWs), and training soldiers to team up, two to four in number, for firing LAWs.

In support of the latter recommendation, the paper was able to cite data (Fig 27) from an experiment using TES, in the instance based on a LAW subcaliber rocket, an inexpensive emulator of the service round that flew an identical trajectory. Using this training device, soldiers who had never fired a LAW before were trained to ambush a tank successfully after four practice firings: a sample of 50 soldiers so trained, in subsequent firing, hit targets at a rate of 75 percent overall. Operating in pairs against a tank moving at 15 miles per hour, passing their ambush position at a range of 75 meters, these soldiers achieved better than 90 percent probability of hit. But safety regulations forbade shooting any projectile at a manned tank, and the subcaliber rockets, though cheap, were in very limited supply.

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42 DCSTS, "Infantry in Mid-Intensity Battle," Fort Monroe, VA, 22 January 1974.

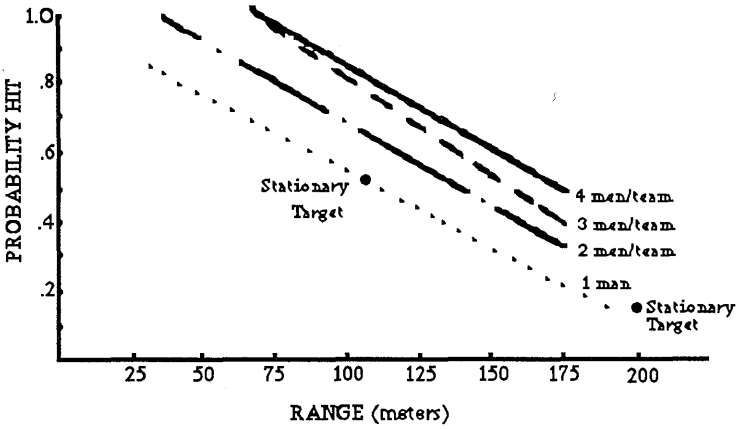


Figure III-13. LAW vs. Moving Tank

The paper urged scrapping conventional infantry training approaches in favor of force-on-force training with TES: preferably MILES or comparable equipment in units. DePuy found the following argument especially persuasive in an all-volunteer Army that was modernizing at a rapid rate, with seven-tenths of a major weapon system for every soldier in its ranks:

> TOW and DRAGON are expensive, on a cost per round basis. For this reason, there has been much attention paid to the "training base," on the grounds that there we establish the quality of TOW gunners. The fallacy of this approach is evident in TOW-equipped units, where, in the usual case, less than 50 percent of assigned personnel have received formal training in a TRADOC institution: center or school. More importantly, we thus expend training resources on entry level soldiers, who, in the unlikely event they are properly assigned, then serve under sergeants who have never been trained formally on the weapon--creating a leadership/job-satisfaction problem from the outset. Recently DA eliminated the MOS 11H, which included TOW personnel, and combined it with 11B (infantryman). TRADOC must now move to put the "training base" with the operational weapons, and throw the U.S. Army's total resources--ammunition, instructor expertise, training aids--behind training lethal antitank gunners in units--for LAW, MAW, and HAW--as teams.

Again the Commander, TRADOC, directed ameliorative actions. Under General DePuy, the distinctions that had emerged during World War II between training in Replacement Training Centers, and training in units began to disappear. Tactical Engagement Simulation opened to TRADOC a wholly new approach to analyzing

difficulties, to identifying opportunities for improvement, and to supporting unit commanders in taking appropriate action.

DePuy was particularly gratified with emerging results of an ARI-TRADOC-FORSCOM test of subsistent TES applied to training infantry squads, reported to him just before he retired. In March, April, and May of 1977, some 18 rifle squads of the 7th Infantry Division at Fort Ord, CA, underwent a 2-week period of tactical testing and training, half trained with conventional methods, half with TES (REALTRAIN).[43] Following training, both trial groups were assigned identical tactical missions against comparable opposition, and their ability to execute recorded. Casualties on both sides were observed, as were such behaviors as use of mutual support, employment of cover and concealment, and provisions for security and observation. TES turned out to match well with Army doctrine: what units learned via TES is what conventional training sought to teach, and demonstrably taught less effectively. TES-trained rifle squads consistently outperformed conventionally trained units: the margin of superiority was in the range *2 to 6 times better*.[44] TES-trained combined arms units engaged in close combat invariably did the job with lower casualties; in most conventionally-trained units, platoon leaders were lost at the high World War II rates; in TES-trained units, leader losses were at least *one-fourth* lower.[45] These results were a resounding affirmation that TRADOC was operating to improve infantry performance in close combat, in that, compared with conventionally trained rifle squads, the TES-trained squads, in the attack:

- Accomplished more missions
- Inflicted more casualties
- Sustained fewer casualties
- Used cover and concealment more effectively
- Were more likely to use overwatch
- Were more likely to employ the M60 machine gun [for any purpose].
- Were more likely to employ the M60 to cover the maneuvering element

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43 Meliza,L.L., Scott, T.D., Epstein, K.I., *REALTRAIN Validation for Rifle Squads II: Tactical Performance*, Research Report 1203, Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Science, March 1979.

44 *REALTRAIN Validation for Rifle Squads*, U.S. Army Research Institute for the Social and Behavioral Sciences, 1977-1979, pp. 1192 [10-77],1203 [3-79], 1213 [7-79].

45 *REALTRAIN Validation for Armor/Anti-Armor Teams*, U.S. Army Institute for the Social and Behavioral Sciences, 1977-1979, pp. 1191 [10-76], 1218 [7-79].

- Used hand grenades more effectively
- Were more likely to attack the more vulnerable approach (flank)
- Were more likely to be actively controlled by a leader
- Were more likely to perform as an integrated unit.

TES-trained squads also performed better in the defense than conventionally trained squads, per these measures of effectiveness:

- Accomplished more missions
- Inflicted more casualties
- Sustained fewer casualties
- Were more likely to use an Observation Post
- Were more likely to cover the vulnerable flank
- Were more likely to deploy to cover their more vulnerable flank
- Made fewer and less basic errors in employment of claymore mines
- Were more likely to cover the most likely route of enemy advance with claymores
- Were more likely to make early detection of the opposing force (OPFOR)
- Were more likely to open fire before the OPFOR.

c. Battle Staff Integration

The lackluster performance of American divisions at Buna and the Kasserine Pass in World War II was no historic anomaly. The first battle of most American wars has been at best a Pyrrhic victory, more often a patent and costly defeat. One American historian, in a study of ten of these calamities, concluded that American soldiers fought better than they might have, and that the fundamental weakness of the U.S. Army was its ill-prepared, incoherent command groups:[46]

> More glaring than poorly trained troops as a first-battle problem is the weakness of command and control. Virtually every case study emphasizes the lack of realistic large-scale operational exercises before the first battle, exercises that might have taught commanders and staffs the hard, practical side of their wartime business as even the most basic training introduces it to the soldier at the small-unit level. Virtually every case study indicates that the results of confusion, demoralization, and exhaustion at the command

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46 Shy, J., "First Battles in Retrospect," In *America's First Battles 1776-1965*, eds., Heller, C.E. and Stofft, W.A., Lawrence, KS: University Press of Kansas, 1986, pp. 329-331.

> and staff level are at best bloody, at worst irremediable--a more crippling defect even than combat units falling apart, because units can often be relieved and replaced in time, headquarters almost never. . . .
>
> At least through the First World War, the professional response to the chronic American weakness in command and control was to plan more thoroughly, leaving as little to chance as possible. But thorough planning with its natural deemphasis on unexpected situations (beyond the scope of contingency plans), led to rigidity and often heavy losses. In other words, the command-and-control weakness and its chosen professional remedy were but two aspects of a single larger problem: inadequate preparation of commanders and staffs for the real world of combat. . . .
>
> It is likely that this problem is more acute in America's first battles because of the size and structure of the prewar Army, and thus the prewar experience of senior commanders and staff officers are--even today--dictated by peacetime needs, not by wartime probabilities. Headquarters in the U.S. Army habitually expend their time and energies on routine administration, seldom pushing training and testing themselves as they push, train, and test their troops. The result too often seems to be that the troops, even when inadequately trained and armed, are readier for war than the men who lead them. The implied lesson is that senior commanders and their staffs might do well to free themselves from the routine busywork of peacetime military life and to plan and carry out frequent, more realistic training exercises for themselves, involving several command levels and arms, that will hone skills that otherwise must be bought with blood and, possible, defeat. . . .

General DePuy brought the Army new methods for training and evaluating commanders and staffs at echelons through corps. The autumn after his retirement in 1977 the Leavenworth-supplied, manual simulation FIRST BATTLE supported the V Corps portion of the annual REFORGER exercise in Europe, and in the summer of 1978, the 8th Infantry Division employed PEGASUS to support brigade-level, hybrid battle simulation, conducted in part on the terrain, in part on the map-board, that demonstrated (with ARI assisting in the evaluation) that such constructive TES could improve the effectiveness of battle staffs by a factor of *two*, as measured not only by indices of battle staff integration, but also by performance in mission accomplishment, area controlled, and force exchange ratio.[47] The present Battle Command Training Program is a lineal descendent of the DePuy innovations.

E. BATTLEWORTHY POLICY: PERFORMANCE-ORIENTED TRAINING

McNair's AGF system perforce operated under stringent time constraints, but as General DePuy pointed out, did so at the hazard of confusing the *process* of training with

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47 Cf. the author's IDA Paper P-2515, op. cit.

its *outcome*. Nonetheless, the victory of 1945 seemingly confirmed the validity of the AGF approach, so that for three decades after World War II, the Army operated under the misapprehension that training in a unit could be managed like that of a grammar school, by schedules, with hours allocated for this or that subject, the unit working through a specified curriculum toward graduation; McNair even spoke of "post graduate training" referring to the C-AMA. In the post-war years, trainers spoke of "giving classes" on a "subject" designated by the Army Training Program (ATP) listing "subjects" and the hours to be devoted to each. Inspection of training in that era invariably started with perusal of the Unit Training Schedule to ascertain how well the unit's paper records corresponded to its prescribed training curriculum, and what classes for what soldiers should be underway at that moment. The trouble was, of course, that a fixed annual curriculum, however cogent, was bound to overtrain to boredom a portion of the soldiers in most units, and undertrain the remainder. Most units changed from personnel turnover constantly, in either peace or war, and with that turnover, the unit's requirements for training changed. In the interests of meeting schedule imperatives, performance objectives--whether soldiers were learning, or how well--were slighted or ignored. What the unit or its soldiers already knew or could do well was seldom taken into account, nor was training focused on what was particularly needed for the unit's wartime mission. Further, the notion of "completing the cycle" or "graduation" obscured the need for continual training and retraining, both in or out of combat, to integrate replacements, to teach new tactics or techniques, to accommodate material or doctrinal modernization, or to prepare for new missions.

It is simple fact that units of the combat arms cannot maintain homeostasis: without constant refreshing and honing of skills, units quickly become lax, especially in performances dependent on teamwork. Continual, performance-oriented retraining can move a unit in the opposite direction, toward efficiency, but only slowly and arduously. Any commander always faces a choice of whether to allow his unit to lose its edge (and some have elected this course in the mistaken view that constant training harasses troops) or whether to insist that the unit meet and maintain stated training standards. In any event, the unit either sours, or improves, and it is usually the commander's choice to make. Unfortunately, neither McNair's AGF during World War II, nor the Army's training base during Korea and Vietnam, fashioned in the image and likeness of AGF, were prepared to

support commanders training units stationed overseas. DePuy's TRADOC, in contrast, assumed that support as a primary mission.[48]

By mid-1944, the AGF had been forced out of the business of training divisions, and had to concentrate on operating Replacement Training Centers. These became quite efficient, in sausage-factory fashion. When the Army went to war in 1950, and again in 1965, there were a few division activations, and some revisiting of the McNair MTP, but by and large the Army simply increased inductions under Selective Service, opened up additional RTC assembly lines, and thus assured a stream of individual replacements to maintain the strength of divisions fighting in Asia. This training was a great accomplishment in many ways, but it, and the overall personnel policy it supported, operated to the distinct disadvantage of the infantry platoons in those divisions, constantly being drained not only by casualties but also by rotations, both in-theater and homeward. The notion of teamwork within the squad was very difficult to instill and to maintain in such platoons, and as General Fry pointed out, the consequence was undoubtedly needless casualties.[49]

In April 1975, with the strong support of Commander, TRADOC, the Department of the Army adopted a substantial revision of Army Regulation 350-1, ARMY TRAINING.[50] In it, the Department set forth as policy for the conduct and management of training, *inter alia*, the following landmark directives:

> **Evaluations.** Commanders at all levels should base their judgement of individual and collective training on personal observations, and upon performance evaluations designed to determine the capability of individuals and units to perform specified tasks in a manner which meets or exceeds established minimum standards of performance. All units should be evaluated at least annually. Proficiency evaluations will be based on performance and not on the number of hours of training to which an individual or a unit has been exposed. . . .
>
> **Training for results.** The purpose of training is to prepare individuals and units to perform missions and tasks required for combat or operational readiness. Personnel should be encouraged to achieve the highest degree of effectiveness possible in the use of weapons and equipment. Normally, the

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48 Chapman, A.W., *The Army's Training Revolution 1973-1990: An Overview*, TRADOC Historical Study Series, Fort Monroe, VA: Office of the Command Historian, U.S. Army Training and Doctrine Command, 1991, pp. 6-9.

49 Fry, op. cit., p. 5.

50 AR 350-1, ARMY TRAINING, Headquarters, Department of the Army, 25 April 1975, effective 1 June 1975. Also, the author's *The Military Value of Training*, IDA Paper P-2515, Institute for Defense Analyses, December 1990.

performance-oriented training approach best achieves the purpose of military training. It requires the development of precise training objectives from which specific tasks to be performed, conditions of performance, and minimum acceptable standards can be derived. Precise training objectives also provide the basis for determining the current level of individual and unit proficiency and planning future training programs.

F. SELECTION AND TRAINING OF LEADERS

During World War II, leaders, many of them senior commanders, were replaced for lackluster performance. General DePuy regarded this process of selection as essential for excellence in battle. Just as the state of training in a line unit should be judged by troop performance, and not by the amount of time spent in training, so any commander should be judged by his results in accomplishing mission, and not by his source of commission or the number and level of Army schools he attended. General George Marshall personally designated the senior commanders of World War II, from division level upwards; often he acted on the recommendation of McNair, or of another adviser, but there is little doubt he would have preferred to have a uniform, objective evaluation of a given candidate's decisional competence under stress, his grasp of doctrine, or his tactical proclivities. Reminiscing late in life, Marshall remembered how pleased he had been with the success of the two Organized Reserve infantry divisions in Italy--the 85th and the 88th Divisions--and how disappointed he had been with the 90th Division in Normandy. He remembered how "we put in McLain and he cleaned [the 90th] up. I had seen [McClain] earlier and marked him right there for command."[51] General DePuy recalls the replacement of his division commander this way:[52]

> General McLain, a splendid officer, told us when he first arrived that there was nothing wrong with the 90th Division except for its leaders. The troops, he said, were like those in the best divisions, and he was right.
>
> Therefore, the secret to success lies in the selection and training of leaders **before** the first battle so that the seasoning process can stay ahead of the casualty process. When the opposite happens, as was the case of the 90th Division, a downward spiral occurs and the resultant disaster is a producer of mass casualties without any offsetting contribution to the war effort. In Normandy, the 90th Division was a killing machine--of our own troops!

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51 Marshall, George Catlett, "George C. Marshall Interviews and Reminiscences for Forrest C. Pogue: Transcript and Notes, 1956-1957," Lexington, VA: George C. Marshall Research Foundation, 1986, p. 578.

52 DePuy, *Changing an Army*, op. cit., p. 202. The time frame of the upward shift from 20 percent to 60 percent mentioned by General DePuy is the 1970's and 1980's.

> This leads to the crucial question as to what has been done to avoid a repetition of this process. I am happy to be able to say that the present officer selection, and [the unit] training process [are] light years ahead of the "peoples' army" of World War II, Korea . . . and the Vietnam War.
>
> First, the Army now selects its battalion and brigade commanders from among the highest quality officers through a selection process. The difference in performance, even in peacetime, is startling.
>
> Second, training has been moved to a new and much higher plateau of effectiveness. . . . From World War I until 1975, the Army followed the Army Training Program which carried a division from individual training through squad, platoon, company, battalion, regiment or brigade to division, in each arm or service on the basis of so many hours for this and so many hours for that. Men and units proceeded through the program whether they learned or not. Frankly, nobody knew. There were few tests and what there were, were subjective. If you could survive the schedule you were presumed to be trained. . . .
>
> My net assessment of the effect of these two vital programs--leader selection and performance training--is that the performance and battle participation level of the American Army has moved from the 20 percent to the 60 percent level and is rising. . . .

DePuy's estimate of progress is probably about right. He has often observed that the primary difference between the Army as it was when TRADOC was formed, and the Army of today is the professionalism of its leaders, from the fire team within the rifle squad, to the tank commander, to the platoon sergeant, and up the ranks of officers. But that difference was brought about as much in the Army's units as in its schools, and TRADOC played a role in both.

The Army's task for the future is to advance upon the remaining 40 percent of readiness for battle. Success in that endeavor will surely *not* depend wholly upon the kinds or amount of schooling available for its leaders. It will depend, rather, on attracting and developing military professionals avid enough to ferret out the last iota of current information on what is likely to affect battle outcome, and to experiment persistently to find better techniques for assuring the success of soldiers engaged in close combat. Schooling they must have, although the current kind and amount of schooling should not delimit thought about better approaches. But learning about what it takes to move the point of the arrow swiftly and surely to the selected objective occurs most surely in operational units, in the field. Whatever the cost, the nation must assure frequent opportunities for professional soldiers to exercise units, against thinking foes, amid as much of the friction of war as modern training technology can muster. Only then could a future President dispatch the U.S. Army confident of operational and tactical effectiveness at minimum cost.

IV. CONCLUSION: THE SECRET REVEALED

> Their nation does not wait for the outbreak of war to give men their first lesson in arms. They do not sit with folded hands in peace-time only to put them in motion in the hour of need. On the contrary, as though they had been born with weapons in hand, they never have a truce from training, never wait for emergencies to arise. Moreover their peace maneuvers are no less strenuous than veritable warfare. Each soldier daily throws all his energy into his drill, as though he were in action. Hence that perfect ease with which they sustain the shock of battle. No confusion breaks their customary formation, no panic paralyses, no fatigue exhausts them. And as their opponents cannot match these qualities, victory is the invariable and certain consequence. Indeed, it would not be wrong to describe their maneuvers as bloodless combats, and their combats as sanguinary maneuvers. . . .
>
> Josephus, *Bellum Judaicum*[1]

A. AMERICAN COMBINED ARMS

In recent years, General DePuy has talked often about the "style" of an army, pointing out that those armies acknowledged by historians to have been exceptionally efficient had a distinctive *modus operandi*--the methodical operational and tactical thrusting of Roman infantry, the mounted sweeps of the Parthians or the Mongols, the combined-arms operations of the Byzantines under Belisarius, the amphibious raids of the Vikings. He believes that there is emerging such a style in armed forces of the United States, a way of waging war that combines the arms of our land, sea, and air services, draws adroitly on advanced technology, concentrates force from unprecedented distances with overwhelming

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1 Josephus (of Jerusalem, first century A.D.), describing the Roman army during the First Jewish Revolt (AD 66-73). Quoted in Grant, *The Army of the Caesars*, op. cit., p. xxvii ff. The passage continues: "This vast empire of theirs has come to them as the prize of valor, and not as a gift of fortune. . . . Perfect discipline makes the army an ornament of peace-time and in war welds the whole into a single body--so compact are their ranks, so alert their movements in wheeling to right or left, so quick their ears for orders, their eyes for signals, their hands to act upon them. Prompt as they consequently ever are in action, none are slower than they in succumbing to suffering, and never have been known in any predicament to have been beaten by numbers, by ruse, by difficulties of ground, or even by fortune--for they feel surer of victory than of fortune's power. Where counsel thus precedes active operations, where the leaders' plan of campaign is followed up by so efficient an army, no wonder that the empire has extended its boundaries on the east to the Euphrates, on the west to the ocean, on the south to the most fertile tracts of North Africa, on the north to the Danube and the Rhine. . . ."

suddenness and violence, and blinds and bewilders the foe.[2] The enervation of the Soviet Union notwithstanding, United States armed force design, materiel modernization, and training for the wars and near-wars inevitable in the years that lie ahead must build systematically on those elements of style, and improve them continuously. A nation's fighting edge dulls quickly, and forging forces for the future is a slow and arduous undertaking.

There are two cardinal "lessons learned" from American wars of the 20th Century: First, the Republic pays for neglect of its armed forces in time of nominal peace with needless dead and maimed American youth in time of war. The World Wars, Korea, and Vietnam killed over a half-million citizens, and injured millions more.[3] In those wars, the battle casualty burden was borne mainly by forces engaged in close combat on land: 8 out of 10 Americans killed or wounded in action. Although infantry and armor units have during the past 50 years comprised an ever-shrinking fraction of the Army afield, and in a contemporary theater of war would constitute only about 25 percent of all forces, they would still incur 80 percent of the casualties.[4] Given the reach and lethality of modern ordnance, the penalty for lack of preparedness for war could be shockingly stiff in the future. Conversely, the reward for peace-time investments in readiness for battle--such as were evident in the campaigns of the 1980s and the 1990s to date--is assured accomplishment of the mission assigned by the Commander-in-Chief, and avoidance of unnecessary casualties.

Second, the aviation of all the armed services, by adding to close combat on land a vertical dimension, can exert a truly revolutionary influence on the outcome of future battles. The potential of aviation is far from being fully realized. Only complete synchronization of air, land and sea forces can unleash the whole striking power of American armed forces, and toward that end the Chairman of the Joint Chiefs of Staff, the Chiefs themselves, the Commanders-in-Chief of the U.S. combatant commands, and

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2 This section is based on the author's conversations and tape-recorded interviews with General DePuy in 1990 and 1991. At this writing, the General is sick, and has not been able to read this draft. Trevor Dupuy has written, in his *Evolution of Weapons and Warfare*, of a "congruence of weapons, theory and practice" as being the optimal status for any nation's armed forces in any era. Perhaps the United States is closer than it has ever been before.

3 Battlefield deaths totaled around 400,000; the remainder were the result of disease and accidents.

4 Dupuy, T.N., *Attrition*, op. cit., pp. 60-61.

professional officers of the fighting elements of all services must bend their intellects and their energies.[5]

George Marshall caused *Infantry in Battle* to be written to teach properly to the Army the lessons of World War I. The format he adopted suggests that a useful summary of lessons from the wars of the past 50 years, instructing all the Armed Services of the United States, might follow his pattern: a book, with chapters dealing with the following topics:

Table IV-1. Contents of Proposed Volume on the Lessons of War

Chapter	Subheading
Rules	Be leery of "lessons learned" from past wars; mostly, these have proved to be short-sighted, or only situationally valid. Lessons from presumed victories are especially apt to mislead.
Unit Integrity	In the face of a capable enemy, to fragment a unit among headquarters with which it has not trained is tantamount to fratricide.
Discipline	Attention to military dress and deportment often preconditions attention to combatant skill.
Offense	Suppress, and maneuver to position your unit on the flank or rear of the foe; avoid doing what the enemy expects you will do.
Counterattack	Any unit at the moment it presumes victory is vulnerable.
Defense	Suppress and disrupt the enemy with fires, and deny the enemy opportunity to suppress by covering and concealing defensive positions.
Combined Arms	No single service, no branch of service is likely to succeed in combat unaided. U.S. forces fight as combined arms in a theater of operations, under a joint command; so should they train.
Simplicity	For close combat, adopt the most direct, uncomplicated control techniques; train for cohesive teamwork.
Fire and Movement	Suppression without movement is indecisive. Movement without suppression is suicidal. Successful tactics hinge upon combining effective suppression with adroit movement.

(continued)

5 Cf. DePuy, W.E., review of Bellamy, C., *The Future of Land Warfare* in *Parameters*, Vol. XVII, No. 4, December 1987, pp. 106-108.

Table IV-1. (continued)

Chapter	Subheading
Control in Close Combat	Each combatant must sense his leader's position and continuously perceive his intent. His leader must optimize suppression and govern movement to preserve the cohesion of the team, and to maintain its spirit.
Force Design	Provide combatant elements with defensive self-sufficiency.
Training	In war or peace, never cease to train. A unit invariably gains and loses individual members, and teamwork must be continuously refreshed through practice, or it declines rapidly.
Realism in Training	Training is realistic when it injects the unexpected and the arduous--the frictions, the fog of war; when it exacts casualties as reward or punishment for tactics and techniques; when it pits the force in training against a foe who thinks and reacts as a real enemy would.
Targets	Passive targets cannot shoot back; exercises engaging a reactive, sentient, resourceful "enemy" teach how to suppress, how to synchronize fires with movement, and how to use cover and concealment.
Individual Training	Most servicemen spend most of their time in units, and it is there that they learn most of their battle skills; therefore, individual training in units must be as well designed and supported as it is in institutional training.
Collective Training	The foundation of teamwork is a shared concept of how the team functions. A combatant unit is a team of teams, and all unit training should aim ultimately at combined arms teamwork.
Standards	Derive tasks, conditions, and standards for individual and collective training from analyses and experiments with units, in war if possible, in tactical engagement simulation if not.
Evaluation	Time spent in training is an unreliable gage of its effectiveness. Evaluate training by observing performance.
Simulation	All military training save that from battle itself is perforce simulation; the most effective form of unit training is tactical engagement simulation that faithfully reproduces both interactions among weapon systems and the friction of combat, and that elicits intense concentration, like that of battle.

(continued)

Table IV-1. (continued)

Chapter	Subheading
Institutional Training/ Education	Schools establish the professionalism of the force, but they must perform their mission aware of, and involved in solving, the problems facing unit commanders and other trainers in both the Active and Reserve Components. They must train the trainers, and support them wherever they may be, and they must educate the next generation's Marshalls, McNairs, Pattons, Ridgways, Westmorelands, Abrams, and DePuys.
Training and Doctrine	One central authority should fashion the future: to determine how the combatant commands should fight, and therefore how they should be designed, equipped, and trained; to conduct institutional training; and to support individual and collective training in units.

Future wars, regrettably, U.S. forces will have to fight. That statement is as true in 1992 as it was in 1892. There are already evident, however, tendencies in the American body politic to disremember the past, to revive isolationism and demilitarization, and to entrust future national security to military schools and colleges, and to the militia. The secret of future victories is this: learn from the mistakes of the Twentieth Century how to fashion a force for the Twenty-first Century.

BIBLIOGRAPHY

A Military History of World War II. Edited by Stamps, T.D., and Esposito, V.J. West Point, NY: United States Military Academy, 1953.

American Military History. Edited by Matloff, M. Washington, DC: Office of the Chief of Military History, United States Army, 1969.

Armstrong, N.M. *Developments in Ground Forces Training and Training Devices: Revisions to Training of the Soviet Military--Update (U).* DST-1150S-300-91. Defense Intelligence Agency, 1991.

Army Regulation 350-1, ARMY TRAINING, Headquarters, Department of the Army, 25 April 1975 (effective 1 June 1975).

Arthur D. Little, Inc. *Technical Evaluation of Four Dynamic Training Devices.* Final Contract Report for the U.S. Army Combat Arms Training Board, Contract Number DAHG 19-72-C-0032, February, 1973.

Barber, H.F., and Kaplan, I.T. *Battalion Command Groups in Simulated Combat.* U.S. Army Research Institute for the Social and Behavioral Sciences, ARI Technical Papers 353 and 376, 1979.

Barnett, C. *The Desert Generals.* New York, NY: Ballentine Books, 1960.

Blalock, D.N., and Mullis, H.E. *Impact of Realism in Field Training Exercises.* Fort Hood, TX: TRADOC Combined Arms Test Agency, November 1976.

Blumenson, M. "Kasserine Pass, 30 January-22 February 1943." In *America's First Battles 1776-1965.* Edited by Heller, C.E., and Stofft W.A. Lawrence, KS: University Press of Kansas, 1986.

Blumenson, M. *Mark Clark.* New York: Congdon & Weed, 1984.

Blumenson, M. *The Patton Papers 1885-1940.* Vol. I. Boston, MA: Houghton Mifflin Company, 1974.

Blumenson, M. *The Patton Papers 1940-1945.* Vol. II. Boston, MA: Houghton Mifflin Company, 1974.

Bolger, D.P. *Dragons at War.* Novato, CA: Presidio Press, 1986.

Carell, P. *The Foxes of the Desert.* First published as *Die Wüstenfüchse,* Hamburg, 1958. English translation by Savill, M. New York: E.P. Dutton, 1960.

Clausewitz, Carl von. *On War*. Translated and edited by Howard, M., and Paret, P. Princeton, NJ: Princeton University Press, 1976.

Cole, H.M. *The Lorraine Campaign*. United States Army in World War II: The European Theater of Operations. Washington, DC: Historical Division, Department of the Army, 1950.

Collins, A.S., Jr. *Common Sense Training*. San Rafael, CA: Presidio Press, 1978

Combat Developments Experimentation Command. *Evaluation of the Frontal Parapet Foxhole (PARFOX)*. Final Report CDEC Experiment FCO33, October 1976.

DePuy, W.E. "Applied Techniques--the Forgotten Tactic." Lecture to the Advanced Classes of the Infantry School, and to members of the Board for Dynamic Training, October 27, 1971. MS graphics and notes.

DePuy, W.E. "Battle Participation and Leadership." MS remarks to the TRADOC Commanders' Conference, USAC&GSC, Fort Leavenworth, KS, March, 1989.

DePuy, W.E. *Changing An Army: An Oral History of General W.E. DePuy, USA Retired*. Edited by Brownlee, R.L., and Mullen, W.J. Washington, DC: U.S. Military History Institute and U.S. Army Center of Military History, 1988.

DePuy, W.E. Letter, Combat Arms Training Board, Fort Benning, GA, to Brigadier General Richardson (Assistant Commandant, U.S. Army Infantry School), dated 6 April 1973, subject: Visit of Lieutenant General DePuy to USACATB on 3 April 1973, transmitting transcript of DePuy's remarks, and "11 Men 1 Mind," *Army*, March, 1958.

DePuy, W.E. Review of Bellamy, C. *The Future of Land Warfare* in *Parameters*. Vol. XVII, No. 4, December 1987, 106-108.

Dodds, H. "MILES from Moscow." *Jane's Soviet Intelligence Review* (October 1990): 450-454.

Druckman, D., and Bjork, R.A., eds. *In the Mind's Eye: Enhancing Human Performance*. Commmittee on Techniques for the Enhancement of Human Performance, National Research Council. Washington, DC: National Academy Press, 1991.

Dupuy, T.N. *A Genius for War: The German Army and General Staff, 1807-1945*. London: MacDonald and Jane's, 1977.

Dupuy, T.N. *Attrition: Forecasting Battle Casualties and Equipment Losses in Modern War*. Fairfax, VA: Hero Books, 1990.

Dupuy, T.N. *Numbers, Predictions, and War*. London: Macdonald and Janes's, 1979.

Dupuy, T.N. *Understanding War: History and Theory of Combat*. New York: Paragon House, 1987.

English, J.A. *A Perspective on Infantry*. New York: Praeger, 1981.

Field Manual 105-5. *Maneuver Control.* Headquarters, Department of the Army, December, 1973.

Final Report of the Board for Dynamic Training. Six volumes. Fort Benning, GA, 17 December, 1971.

Fisher, E.F. *From Cassino to the Alps.* Edited by Matloff, M. United States Army in World War II: The Mediterranean Theater of Operations. Washington, DC: Historical Division, Department of the Army, 1977.

Fry, J.C. *Assault Battle Drill.* Harrisburg, PA: The Military Service Publishing Company, 1955.

Furlong, W.B. "How the war in France changed football forever." *Smithsonian* 16 (February 1986): 125-138.

Gabel, C.R. *Seek, Strike and Destroy: U.S. Army Tank Destroyer Doctrine in World War II.* Leavenworth Papers No. 12, Combat Studies Institute, U.S. Army Command and General Staff College, 1985.

Gabel, C.R. *The U.S. Army GHQ Maneuvers of 1941.* Washington, DC: Center of Military History, U.S. Army, 1991.

Gardiner, K.W., Fraser, E.C., Pressman, G.L., and Northend, C.A. *Direct Fire Simulation System.* Final report for Combat Development Experimentation Command, Contract DA-04-200 AMC-1884 (X), October 1966.

Gorman, P.F. "How to Win Outnumbered." MS. Fort Monroe, VA: Deputy Chief of Staff for Training and Schools (DCSTS), 8 January 1974.

Gorman, P.F. "Infantry in Mid-Intensity Battle." MS. Fort Monroe, VA: Deputy Chief of Staff for Training and Schools (DCSTS), 22 January 1974.

Gorman, P.F. *SuperTroop via I-Port: Distributed Simulation Technology for Combat Development and Training Development.* Institute for Defense Analyses, Paper P-2374, 1990.

Gorman, P.F. *The Military Value of Training.* Institute for Defense Analyses, Paper P-2515, 1990.

Gorman, P.F. "The Future of Tactical Engagement Simulation." *The Proceedings of the 1991 Summer Computer Simulation Conference.* San Diego, CA: The Society for Computer Simulation, 1991. 1181-1186.

Gorman, P.F. *Trends in the Army Training System.* MS. Fort Monroe, VA: Deputy Chief of Staff for Training and Schools (DCSTS), 21 January 1977.

Grant, M. *The Army of the Caesars.* New York: Charles Scribner's Sons, 1974.

Greenfield, K.R., Palmer, R.R., and Wiley, B.I. *The Organization of Ground Combat Troops.* United States Army in World War II: The Army Ground Forces. Washington, DC: Historical Division, Department of the Army, 1947.

Griffith, Paddy. *Forward Into Battle.* Novato, CA: Presidio Press, 1991.

Gugeler, R.A. *Combat Actions in Korea.* Office of the Chief of Military History, U.S.A., Washington, DC: 1970.

Hart, R.J., and Sulzen, R.H. "Comparing Success Rates in Simulated Combat: Intelligent Tactics vs. Force." *Armed Forces and Society* 14 (2 1988): 273-285.

Hayes, J.F., Griffin , G.R., and Mathers, B.L. *Development of Performance Based Proficiency Tests for Combat Arms Skills.* Final Contract Report for ARI, Contract Number DAHC 19-73-C-0016, May 1974.

Henly, D.C. *The Land That God Forgot. . .* Western American History Series. Fallon, NV: Lanhotan Valley Printing, 1990.

Herbert, P.H. *Deciding What Has To Be Done: General William E. DePuy and the 1976 Edition of FM 100-5, Operations.* Leavenworth Papers, No. 16. Fort Leavenworth, KS: Combat Studies Institute, USAC&GSC, 1988.

Infantry for Battle in Europe, 1978. Bad Kreuznach, Germany: Headquarters, 8th Infantry Division (Mechanized), U.S. Army Europe, 15 February 1978.

Infantry in Battle. Edited by Harding, E.F., Tindall, R.G., Andrews, J.A., and Lanham, C.T. Washington, DC: *The Infantry Journal*, 1934. *Infantry in Battle.* Edited by Harding, E.F., and Lanham, Charles T. Washington, DC: Third Edition, *The Infantry Journal*, 1939.

Infantry Rifle Unit Study (IRUS-75). Five Volumes. Fort Benning, GA: U.S. Army Combat Developments Command, 1968-1970.

Irving, D. *The Trail of the Fox.* New York: Avon Books, 1977.

Kahn, E.J. "Education of an Army." "Profiles" (two parts), *The New Yorker*, October 14, 1944 ff.

Kahn, E.J. "McNair: Educator of an Army: Washington, DC: *The Infantry Journal*, 1945.

Keegan, J. *The Second World War.* New York, NY: Penguin Books, USA, 1989.

Ketchum, R.M. *The Borrowed Years.* New York, NY: Random House, 1989.

Ketchum, R.M. "Warming up on the sidelines for World War II," *Smithsonian*, 22, Number 6 (September 1991): 88-103.

Kesselring, A. *Kesselring: A Soldier's Record.* New York: William Morrow, 1954.

Kreidberg, M.A., and Henry, M.G. *History of Military Mobilization in the United States Army 1775-1945.* Pamphlet No. 20-212. Washington, DC: Department of the Army, November 1955.

Lerwill, L.L. *The Personnel Replacement System in the United States Army.* Department of the Army Pamphlet No. 20-211. Washington, DC: 30 August 1954.

Luvaas, J. "Buna, 19 November 1942--2 January 1943: A 'Leavenworth Nightmare.'" In *America's First Battles 1776-1965.* Edited by Heller, C.E., and Stofft, W.A., Lawrence, KS: University Press of Kansas, 1986.

Lynch, J.S., Kennedy, J.W., and Wooley, R.L. *Patton's Desert Training Center.* Fort Myer, VA: Council on America's Military Past, 1986.

Madden, R.W. "The Making of a General of the Army." *Army*, 40 (12 1990): 52-57.

Mahon, J.K., and Danysh, R. *Infantry.* Army Lineage Series, Part I: Regular Army. Washington, DC: Office of the Chief of Military History, 1972.

Mailing List. "Infantry in Battle." Volume V, 1932-1933. Fort Benning, GA: The Book Shop, The Infantry School, 1933. 5-9. XXIV, July 1942, 245-266, 267-312. XXVI, 63-96,125-140.

Marshall, G.C. *Memoirs of My Services in the World War 1917-1918.* Boston: Houghton Mifflin, 1976.

Marshall, G.C. *George C. Marshall Interviews and Reminiscences for Forrest C. Pogue: Transcript and Notes, 1956-1957.* Edited by Bland, L.I., Bland J.K., and Stevens, S.R. Lexington, VA: George C. Marshall Research Foundation, 1991.

Marshall, G.C. "Profiting by War Experiences," *Infantry Journal* 18, January 1921. 34-37.

Marshall, G.C. *"We Cannot Delay" July 1, 1939-December 6, 1941.* Vol. 2. The Papers of George Catlett Marshall. Edited by Bland, L.I., Asst. Eds. Ritenour, S.R., and Wunderlin, C.E. Baltimore and London: The Johns Hopkins University Press, 1986.

Marshall, G.C. Testimony: "Emergency Supplemental Appropriation Bill, Fiscal Year 1940." Hearings before the Subcommittee on Deficiencies, House Committee on Appropriations, U.S. Congress. Washington, DC, November 17, 1939.

Marshall, G.C. *The Soldierly Spirit, 1880-1939.* Vol. 1. The Papers of George Catlett Marshall. Edited by Bland, L.I., Asst. Ed. Ritenour, S.R., Baltimore and London: The Johns Hopkins University Press, 1981.

Marshall, S.L.A. *Men Against Fire: The Problem of Battle Command in Future War.* New York: William Morrow, 1964 (1st printing, 1947).

Mathers, B.L., Shriver, E.L., Root, R.T., Word, L.E., Whitter, D.W., and Griffin, G.R. *Training Manger's Handbook for Situational Training.* Contract DAHC 19-73-C-0017, Final Contract report for ARI, November 1973,

Matloff, M. "The American Approach to War, 1919-1945." In *The Theory and Practice of War.* Edited by Howard, M. Bloomington, IN: Indiana University Press, 1975. 229-237.

Matloff, M. *Strategic Planning for Coalition Warfare, 1943-1944*. United States Army in World War II, The War Department. Washington, DC: Office of the Chief of Military History, Dept. of the Army, 1959.

McDonough, J.R. *The Defense of Hill 781*. Novato, CA: Presidio Press, 1988.

Meliza, L.L., Scott, T.D., and Epstein, K.I. *REALTRAIN Validation for Rifle Squads II: Tactical Performance*. Research Report 1203. Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Science, March 1979.

Military Policy of the United States 1775-1944. Foreword by Col. H. Beukema, Professor, USMA. West Point, NY: Department of Economics, Government and History, United States Military Academy, 1944.

Millett, A.R. "Cantigny, 28-31 May 1918." In *America's First Battles 1776-1965*. Edited by Heller, C.E., and Stofft, W.A. Lawrence, KS: University Press of Kansas, 1986.

Millett, A.R. *The General: Robert L. Bullard and Officership in the United States Army 1881-1925*. Contributions in Military History, No. 10, Westport, CT: Greenwood Press, 1975.

Millis, W. *Arms and Men*. New York: Mentor Books, 1958

Milner, S. *Victory in Papua*. United States Army in World War II, The War in the Pacific. Washington, DC: Office of the Chief of Military History, Department of the Army, 1957.

Moenk, J.R. *A History of Large-Scale Maneuvers in the United States, 1935-1964*. Fort Monroe, VA: U.S. Army Continental Army Command, 1969.

Morton, L. "Germany First." *Command Decisions*. Edited by Greenfield, K.R. United States Army in World War II, The War Department. Washington, DC: Office of the Chief of Military History, Dept. of the Army, 1960. 11-47. Reprinted in *20th Century War: The American Experience*. Fort Leavenworth, KS: Combat Studies Institute, USAC&GSC, 1985. 127-158.

Nenninger, Timothy K. "The Fort Leavenworth Schools." Thesis for Doctor of Philosophy in History, University of Wisconsin, 1974.

Ney, V. *Evolution of the U.S. Army Division 1939-1968*. CORG-M-365. Fort Belvoir, VA: Technical Operations, Inc., Combat Operations Research Group, for U.S. Army Combat Developments Command, January 1969.

Ney, V. *Organization and Equipment of the Infantry Rifle Squad: From Valley Forge to ROAD*. CORG-M-194. Fort Belvoir, VA: Technical Operations, Inc., Combat Operations Research Group, for U.S. Army Combat Developments Command, January 1965.

Ney, V. *The Evolution of the Armored Infantry Rifle Squad*. CORG-M-198. Fort Belvoir, VA: Technical Operations, Inc., Combat Operations Research Group, for U.S. Army Combat Developments Command, March 1965.

Olmstead, J.A., Christensen, H.E., and Lackey, L.L. *Components of Organizational Competence: Test of a Conceptual Framework.* Technical Report 73-19. Alexandria, VA: Human Resources Research Organization, 1973.

Olmstead, J.A., Elder, B.L., and Forsyth, J.M. *Organizational Process and Combat Readiness: Feasibility of Training Organizational Effectiveness Staff Officers to Assess Command Group Performance.* IR-ED-78-13. Alexandria, VA: Human Resources Research Organization, 1978.

Palmer, R.R., Wiley, B.I., and Keast, W.R. *The Procurement and Training of Ground Combat Troops.* United States Army in World War II: The Army Ground Forces. Washington, DC: Historical Division, Department of the Army, 1948.

Papuan Campaign: the Buna-Sanananda Operation. Washington, DC: Historical Divsion, War Department, May, 1944.

Patton, G.S., Jr. *War as I Knew It.* New York: Pyramid, 1966.

Patton, G.S., Jr. *The Desert Training Corps.* Edited by Province, C.M. San Diego, CA: Patton Historical Society, 1990. This pamphlet takes its name from a Cavalry Journal article by Patton in the edition of September-October 1942, which is reproduced, plus his "Notes on Tactics and Techniques of Desert Warfare."

Pogue, Forrest C. *George C. Marshall: Education of a General: 1880-1939.* Edited by Harrison, G. New York: Viking Press, Inc., 1963.

Pogue, Forrest C. *George C. Marshall: Ordeal and Hope, 1939-1942.* New York: Viking Press, Inc., 1965.

Pogue, F.C. *George C. Marshall: Organizer of Victory 1943-1945.* New York: Viking Press, Inc., 1973.

Professional Military Education. Hearings before the Panel on Military Education of the Committee on Armed Services, House of Representatives, One Hundredth Congress, First and Second Sessions, 1987-1988. Washington, DC: G.P.O., 1990.

REALTRAIN Validation for Armor/Anti-Armor Teams. U.S. Army Institute for the Social and Behavioral Sciences, 1977-1979. Reports 1191 [10-76], 1218 [7-79].

REALTRAIN Validation for Rifle Squads. U.S. Army Research Institute for the Social and Behavioral Sciences, 1977-1979. Reports 1192 [10-77],1203 [3-79], 1213 [7-79].

Report of the Panel on Military Education of the One Hundreth Congress, Committee on Armed Services, House of Representatives, One Hundred First Congress, First Session, April 21, 1989. 12. Washington, DC: G.P.O., 1989.

Rommel, E. *Infantry Attacks.* Greenhill Books, London, 1990. First published as *Infantrie Greift an: Erlebnisse und Erfarhrungen* [Engagements and Lessons Learned]. Potsdam: Ludwig Voggenreiter Verlag, 1937. Washington, DC: first English edition, *The Infantry Journal*: 1944.

Rommel, E. *The Rommel Papers*. Edited by Hart, L., B.H. Harcourt, Brace, New York: 1953.

Ruppenthal, R.G. *Utah Beach to Cherbourg: 6-27 June 1944*. Edited by Harrison, G. Washington, DC: U.S. Army Center of Military History, 1990.

Shaara, M. *The Killer Angels*. New York: Ballentine Books, 1975.

Shriver, E.L., Mathers, B.L., Griffin, G.R., Jones, D.R., Word, L.E, Root, R.T., and Hayes, J.F. *REALTRAIN: A New Method for Tactical Training of Small Units*. ARI Technical report S-04. December 1975.

Shy, J. "First Battles in Retrospect." In *America's First Battles 1776-1965*. Edited by Heller, C.E., and Stofft, W.A. Lawrence, KS: University Press of Kansas, 1986.

Skelton, Ike. "American Strategy: A Worthy Past, an Uncertain Future." *Congressional Record* 133 (No. 179, November 9 1987).

Skelton, Ike. "Military Strategy: Unfocused, Unstudied, Unlearned." *Congressional Record* 133 (No. 155, October 6 1987).

Skelton, Ike. "Strategy and Military Education: Concerns, Trends, and Unanswered Questions." *Congressional Record* 133 (No. 168, October 26 1987).

Skelton, Ike. "Strategy and Officer Education: the Weak Link." *Congressional Record* 133 (No. 171, October 29 1987).

Skelton, Ike. "The HASC Panel on Military Education: Focusing the Spotlight." MS.

Strawson, J. *The Battle for North Africa*. New York: Ace Books, 1969.

Sulzen, R.H. *Annotated Bibliography of Tactical Engagement Simulation 1966-1984*. Technical Report 725. Monterey, CA: Army Research Institute Field Unit, October 1986.

Sulzen, R.H. "Winning with Tactical Engagement Simulation." *Military Review* (May 1987).

Tactical and Technical Trends. No. 21. Washington, DC: Military Intelligence Service, War Department, March 25, 1943.

Taylor, J.G. *Lanchester Models of Warfare*. Vol. I. Arlington, VA: Operations Research Society of America, 1983.

The Army Almanac. Edited by Young, G.R. Harrisburg, PA: Military Service Publishing Co., 1959.

Watson, M.S. *Chief of Staff: Prewar Plans and Preparations*. United States Army in World War II, The War Department. Washington, DC: Office of the Chief of Military History, Dept. of the Army, 1950.

Weigley, Russell F. *History of the United States Army*. New York: MacMillan, 1967.

Weiss, H.K. "System Analysis Problems of Limited War." *AIAA Annals of Reliability and Maintainability* 5 (1966).

Winton, H.R. *To Change an Army*. Lawrence, KS: University Press of Kansas, 1988.

Whitaker, J.T. "These are the Generals--McNair." *Saturday Evening Post*. January 30, 1943.

APPENDIX A

THE ACID TEST: BATTLE

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THE ACID TEST: BATTLE

A. BUNA, 19 NOVEMBER 1942 - 2 JANUARY 1943

In October 1940, four National Guard Divisions were federalized, among them the 32d Infantry Division from Wisconsin and Michigan. The division was understrength when called up, with only a little over half its enlisted soldiers, and with many officers and noncommissioned officers overage, physically incapable of active service, or eligible for hardship discharges. Hence, the 32d Division required a substantial personnel infusion from other sources--chiefly Selective Service inductees. Of 18 National Guard Divisions mobilized during the war, only four required a larger such intake. The 32d went through the GHQ training program, participated as a division in the Louisiana Maneuvers of 1941, and sent to the Carolina Maneuvers later that year a regimental combat team consisting of the 128th Infantry, a battalion of field artillery, and engineer, medical, and signal units (Fig. A-1). Umpires rated this task force's performance "of the highest order." But month by month, the division's trained strength was drawn off to fill newly activated divisions. In early 1942, the 32d Division was reorganized on the triangular pattern, and was alerted for movement to Northern Ireland. Major General Edwin F. Harding assumed command. Harding had been with George Marshall in the 15th Infantry in China, and again at the Infantry School, and was remembered well and kindly by Marshall for his humor and amiability; Harding is credited in *Infantry in Battle* with planning the book and supervising its preparation.[1]

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1 Harding assumed command of the 32d Infantry Division on 9 February 1942 as a Brigadier General, and was promoted to Major General on 4 March 1942. *The Army Almanac*, Harrisburg, PA: Military Service Publishing Company, 1959, p. 663. George Marshall recalled in 1956 that, when Harding had called on him just after McNair had given him command of the division, Marshall had predicted "This is going to be your downfall. You're going to have many friends and you're going to get relieved from command." In reminiscing about this exchange with Harding, Marshall told of his commending to Mrs. Marshall, as subject matter for a speech she had to make to a group of mothers and wives of servicemen, that "mothers should look with care in the training period to a popular commander. Chances are nine out of ten he's going to get licked." *George C. Marshall Interviews and Reminiscences*, Lexington, VA: George C. Marshall Research Foundation, 1986, p. 340.

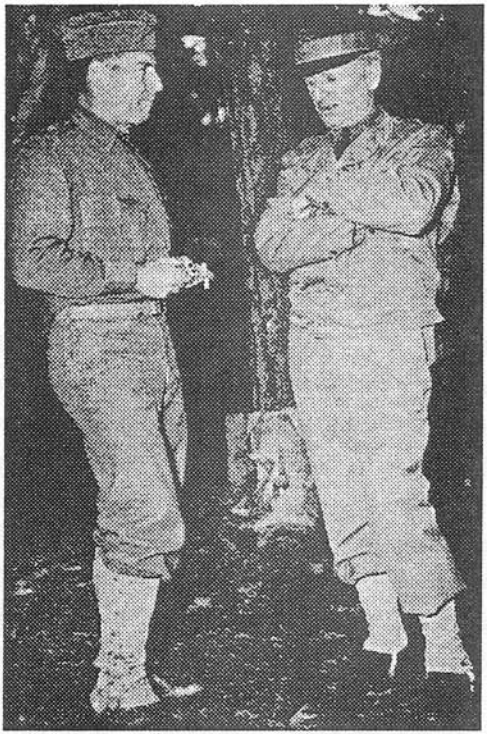


Figure A-1. Brig. Gen. E.F. Harding with Lt. Gen. McNair, Carolina Maneuvers, 1941

After shipping its engineer battalion to Ireland, the division itself was redirected to the Pacific, to be attached to I Corps, and ordered to leave from San Francisco, thence to be shipped to Adelaide, in southern Australia. Although a newly activated engineer battalion and 3,000 individual replacements fresh from RTCs were promptly assigned, the division sailed on 22 April 1942 still short 4,788 enlisted men, a third of its strength. On arriving in Adelaide on 14 May, the 32d found conditions adverse: the weather was cold and rainy, there was little ammunition for training, and jungle training--the stated desideratum--was not possible. Eventually, the division was moved again to Brisbane, 1,000 miles or so distant on Australia's east-central coast.

In September, General MacArthur ordered the 32d Division to New Guinea, to join in the first offensive ground campaign of the war against Japan: an Allied counter offensive against a Japanese force that had occupied bases at Buna and Gona along the

northeastern coast of Papua, and thrust across the Owen Stanley Range to within 32 miles of Port Moresby on the southwestern coast.[2] At the time that decision was taken, the situation at Port Moresby was grave, but the 32d was scarcely combat ready. Since February, the division had moved from Louisiana to Massachusetts, to San Francisco, to Adelaide, to Brisbane, each move consuming the better part of a month. In both Adelaide and Brisbane, it had had to build itself a cantonment, and at the same time to train its fillers. In all, it had completed only 5 weeks of training overseas before it was deployed to Papua, and placed under Australian command for the operation to eject the Japanese. Figure A-2 depicts the general situation:

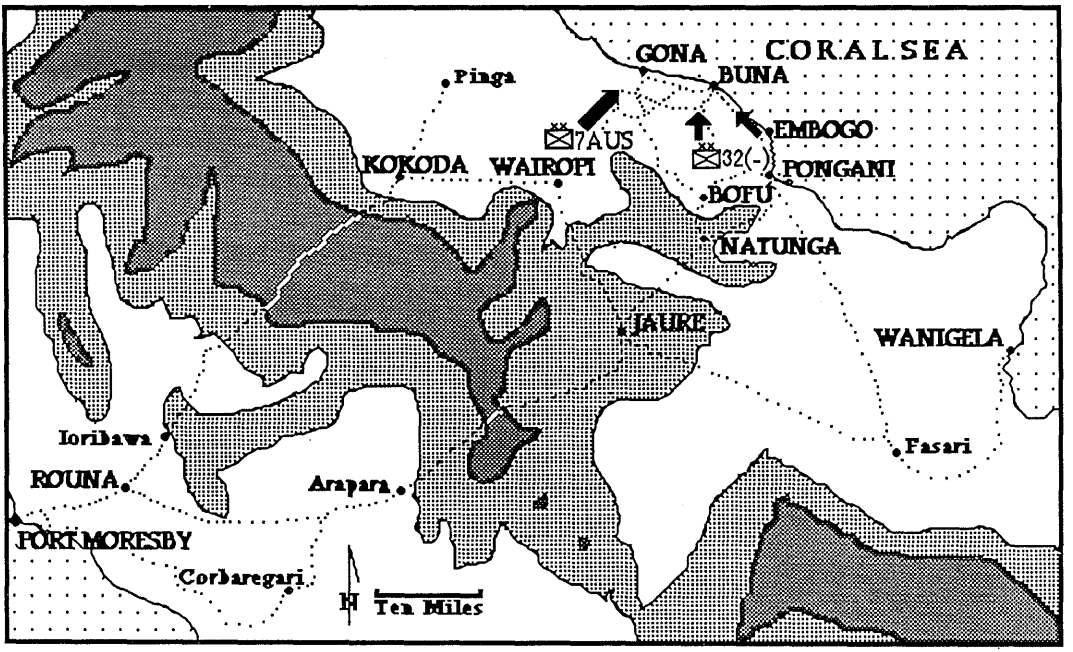


Figure A-2. Concentration of Allied Forces Against Buna and Gona in Papua, October 1942-January 1943

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2 This account draws chiefly upon: *A Military History of World War II*, eds., Stamps, T.D., and Esposito, V.J., West Point, NY: United States Military Academy, 1953, pp. 344-354; Luvaas, Jay, "Buna, 19 November 1942-2 January 1943: A 'Leavenworth Nightmare.' " In *America's First Battles 1776-1965*, eds., Heller, C.E., and Stofft, W.A., Lawrence, KS: University Press of Kansas, 1986, pp. 186-225; Milner, S., *Victory in Papua*, United States Army in World War II, The War in the Pacific, Washington, DC: Office of the Chief of Military History, Department of the Army, 1957.

By October, two regimental combat teams of the division had arrived at Port Moresby; the division's third regiment, and most of its supporting troops, waited in Brisbane for shipping. The Allied concept of operations was a two-pronged advance: one on the north to drive the Japanese back from Port Moresby the way they had advanced, along the trail from Kokoda; the other on the south to envelop the Japanese coastal enclave at Buna. On the northern axis, the 7th Australian Division with two brigades advanced on foot 60 miles across the rugged, mist-enshrouded Owen Stanley Range along the trail ROUNA-KOKODA, fighting actions against the retreating Japanese to clear the mountain passes, and to capture Kokoda on 2 November. To protect 7th Division's right flank, 2d Battalion, 126th U.S. Infantry marched simultaneously 120 miles across the Owen Stanley Range along the trail CORBAREGARI-ARAPARA-JAURE-NATUNGA, reaching NATUNGA 10 November. On that date, the Japanese delaying force disengaged from the 7th Division, and withdrew toward Pinga; the 7th Division then attacked on the axis WAIROPI-GONA.

The advance on the southern axis made military history: it involved the first large-scale movement of U.S. troops by air, transports of the U.S. 5th Air Force being employed to move combat elements of the 32d Division from Australia to New Guinea, and then again to overleap the Owen Stanley Range, landing troop units on small strips previously cut in the jungle by gold-miners, to deploy the division for the attack on Buna. The 32d Division's 128th Infantry was flown 140 miles from PORT MORESBY into WANIGELA, closing 18 October; whence it moved overland and by small boats to PONGANI, reaching that place by the end of October. The 1st Battalion of the 126th U.S. Infantry was flown from PORT MORESBY 100 miles into an air strip at FASARI on 8 November, and thence moved north, reaching PONGANI on 15 November. The remainder of the 126th Infantry was flown from Port Moresby 100 miles directly into PONGANI.

The Allies then confronted around 5,000 Japanese holed up in GONA and BUNA: the Australians at WAIROPI, the 126th U.S. Infantry at BOFU, and the 128th U.S. Infantry at EMBOGO. As General MacArthur later put it, this concentration represented "tactical and strategic elements of a broadened conception of warfare that will permit the application of offensive power in swift, massive strokes, rather than the dilatory and costly island-to-island advance that some have assumed to be necessary. . . ."

But at the outset the 32 Division's stroke at Buna was neither swift nor massive. During the strategic maneuver phase, the Allied forces had been fighting mainly against terrain, weather, and distance. The tactical phase, the final push on Buna and Gona, coincided with the rainy season [November to January]. Trails turned into troughs of viscous mud, and marshes and swamps disappeared under dank flood waters. Average humidity for December was 82 percent, with temperatures ranging 70 to 90 degrees. Malaria, dengue fever, blood-sucking leeches, and insects abounded. The approach march itself had constituted all the hell that war is reputed to be, the Americans suffering from their own vacuous disregard for basic field sanitation and jungle prophylaxis, as well as the arduous terrain, and cold rations. But, although none of the Allies fully appreciated the danger, more lethal threats stood between them and their objectives. The Japanese had prepared their defenses around Buna and Gona with care, constructing well-bulwarked, above-ground bunkers invisible under jungle vegetation, from which machine guns, cannon, and other weapons covered all possible avenues of approach.

The 32d Division was ordered to capture Buna; the division had the infantry units of two infantry regiments for the operation, but few infantry heavy weapons, and no artillery, engineer, or other divisional support and supply units. Major General Harding ordered the division to attack Buna in two columns, the 128th Infantry to advance along trails paralleling the coast, and the 126th somehow to converge on Buna from inland on its left flank.

There ensued a series of battles, or more precisely, martial gropings in jungle and swamp against the heavily constructed, well-camouflaged Japanese positions, that ended in mid-January 1943. The two U.S. regimental columns, denied by the terrain easy lateral communications, perforce operated independent of each other. When 32d Division headquarters lost radio communications with the 7th Australian Division, Harding ordered the 126th to move leftward, away from the axis of the 128th. Inadvertently, the 126th crossed the path of the advancing Australians, and on 19 November, was attached to the 7th Division. Meanwhile, the 128th Infantry, advancing along the shore, suffered a series of repulses as it entered the Japanese defensive zone. The dense vegetation severely restricted observation, and terrain foreclosed maneuver except in the swamps or along very narrow corridors, well known to the defenders and covered by fire. The 128th's attack faltered.

Australian artillery was flown in to support the 32d, and Allied close air support sortied to aid the division when weather permitted. But among the 32d Division's infantry units, losses from casualties and disease mounted, and food and ammunition became scarce--men in some American rifle companies were issued but one C-ration per six men per day--so that fewer and fewer soldiers could be mustered for each day's fighting. Battalion frontages were narrowed to 150 yards or so--less than the doctrinal frontage for a company. On 21 November, General MacArthur ordered an all-out attack by the entire Allied force, and committed substantial air resources to support it. For the 32d Division front, three strikes were scheduled: the first bombing runs at 0800 came as a surprise to the division's front line infantry, who had not been notified. A second strike, set for 1245, did not materialize. A third, executed around 1600, may have caused more American casualties than Japanese. There was no progress that day.

Eventually, the Australians released their "reinforcements" from the 126th Infantry back to the 32d Division. Plugging units of the 126th into the line for the attack on the Buna defenses, Harding's headquarters compounded an already unworkable intermixture of units. Command arrangements Byzantine in their complexity proved rigid as well. On 23 November a battalion commander messaged for permission to withdraw elements "neck deep in mud and water," but a code clerk at division headquarters transcribed the phrase as "knee deep," and Harding ordered the attack to continue, stating that "this is war, not a maneuver." On 24 November there was another air attack, to be followed by infantry assaults. Promised bombers did not appear, and the four fighters which filled in for these strafed a U.S. battalion command post.

Nonetheless, after 6 weeks of grueling, small unit actions, Buna was taken. The Japanese resisted stubbornly up until the end, and the price of victory was high. Overall, the 32d Division suffered 90 percent casualties. Altogether, of 10,825 32d Division soldiers committed to the Buna operation, 602 were killed in action, 88 died of wounds, 17 died from disease, and 62 were missing in action. The Division also suffered 1,680 wounded in action, and 7,125 sick in action. In the 126th Infantry Regiment, of a strength of 1,199 in mid-December 1942, only 165 officers and men were available for duty three weeks later, on 9 January 1943. All told, two out every three Americans who entered Papua contracted an infectious disease.[3]

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3 Milner, S., *Victory in Papua*, United States Army in World War II, The War in the Pacific, Washington, DC: Office of the Chief of Military History, Department of the Army, 1957, pp. 370-372.

Of the more than 2000 Japanese defenders of Buna, a few hundred were captured; the remainder died.

The record of the 32d Division in Papua was generally deemed to condemn neither Army doctrine nor McNair's training concepts. The official after-action report concluded that "failures were in execution, not in the fundamentals of standard training and operation," and that "no new principles of warfare were discovered during the Buna Campaign [although] the nature of the terrain and the disposition of the enemy necessitated some novel applications of well known principles." McNair had an AGF observer on the scene, Col. H.F. Handy, who reported that "My faith in our tactical teachings and in our tactical doctrine remains unshaken. I am convinced that they are essentially sound, and that our chief danger lies in failing to apply them."

The commander of I Corps, Lieutenant General Robert L. Eichelberger, had been sent forward to the Buna front by General MacArthur to relieve Major General Harding, and to take command of the division's elements, replacing any leader who lacked aggressiveness (Fig. A-3). Arriving at the Buna front on 30 November 1942, Eichelberger found not regiments and battalions in the attack, but dispirited, disorganized, indisciplined groupings of soldiers, enervated by casualties, hunger, fatigue and fever. Eichelberger suspended operations for 2 days of reorganization, resupply, and mentoring, and then resumed the attack. Simultaneously, he undertook a wholesale replacement of leaders. Discovering that it had been customary for units to stop all movement at nightfall, Eichelberger directed that thereafter each company "for training purposes, would send out one patrol commanded by an officer each night, that patrol to stay out for two hours." Each day was a day in training for the entire command: cover, concealment, camouflage, security, fire discipline, movement techniques, field sanitation and logistics. Eichelberger never completely resolved the difficulties with air-ground cooperation, reporting that one day, during a visit to the front by a senior Australian general, U.S. planes commenced strafing runs on the 32d Division units, thinking they were targeting Japanese positions 3 miles distant. As Eichelberger put it, "Our men got fed up and fired back."[4] The 32d Division perforce learned combined arms operations the hard way: infantry units

4 Eichelberger, *Jungle Road*, p. 40. Quoted in Luvass, op. cit., p. 391. The 126th Infantry reported that whenever Australian artillery fired in its support, a Japanese gun would fire one round into their midst, creating the impression that the Australians were firing short. *Tactical and Technical Trends*, No. 21, Washington, DC: Military Intelligence Service, War Department, March 25, 1943, p. 18.

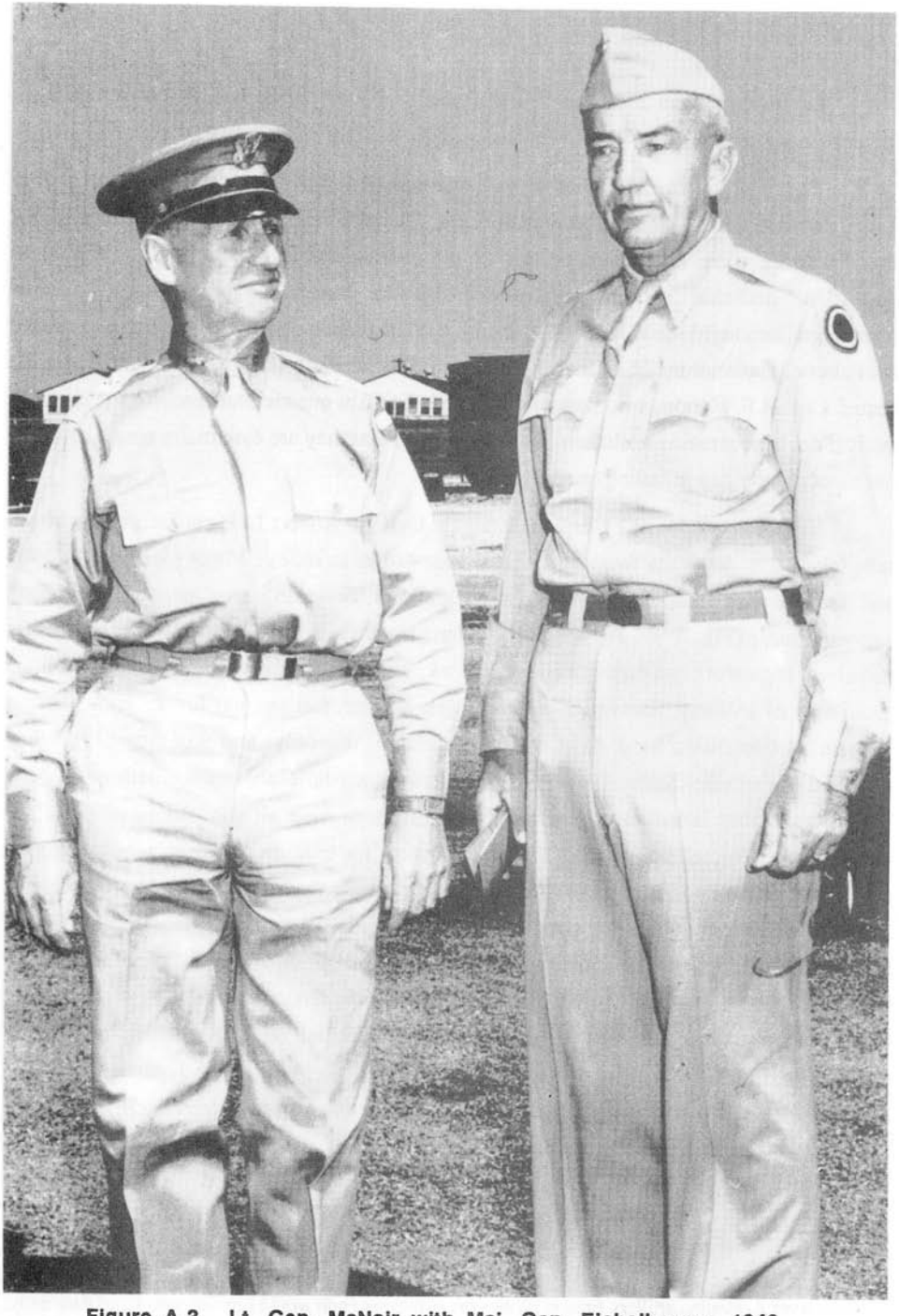


Figure A-3. Lt. Gen. McNair with Maj. Gen. Eichelberger, 1942

discovered how to cooperate with air, and Australian artillery and armor in the midst of battle against a skillful and determined foe.

The 32d fought without its own artillery, and no doubt paid in casualties for its absence. But Eichelberger attributed the 32d Division's difficulties to poor training of its infantry. The division had attempted to improvise moving targets for training in Australia, but the division's shooting in Papua did not impress the Japanese. Enemy diaries captured at Buna recorded that the Americans "in the jungle fire at any sound. . . . From sundown until about 10 p.m. they fire light machine guns and throw hand grenades recklessly . . . there are some low shots, but most of them are high. They do not look out and determine their targets from the jungle. They are in the jungle firing until their ammunition lasts. Maybe they get more money for firing so many rounds."[5] AGF observers reporting back to McNair commended to him the Australian practice of live ammunition in training, including overhead artillery and mortar fire to teach infantry how to synchronize their attacks with supporting arms in the jungle.

B. KASSERINE PASS, 30 JANUARY - 22 FEBRUARY 1943

OPERATION TORCH, the Allied invasion of North Africa on 8 November 1942, was a three-pronged attack: Western Task Force under Major General Patton sailed from the U.S. to assault the Casablanca region of Morocco with the U.S. 3rd Infantry Division, a Combat Command of 2d Armored Division, and two regimental combat teams of the U.S. 9th Infantry Division; Center Task Force under Major General Fredendall, sailed from England to land a force at Oran, Algeria, comprised of the 1st Infantry Division, CCB of 1st Armored Division, and II Corps troops; Eastern Task Force, under Major General Ryder, came from Ireland and England, to assault Algiers with the 168th Regiment of the 34th Division, an RCT of the 9th Division, and two British brigade groups.[6] Subsequently, 1st Armored Division (-) landed at Algiers as well. French resistance folded soon after the Germans, on 11 November, abrogated the 1940 armistice by occupying all of France. General Eisenhower, the Allied Commander, then sent his forces racing for Tunis, seeking to occupy that strategic area before the Axis could array defenses there. The American contingents were under II Corps, Major General Fredendall commanding.

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5 Luvaas, op. cit., p. 222.

6 This account draws chiefly upon: *A Military History of World War II*, op. cit, pp. 60-65; Blumenson, Martin, "Kasserine Pass, 30 January-22 February 1943," In *America's First Battles 1776-1965*, op. cit., pp. 226-265.

The Allies lost that race, and the forces involved in the drive eastward arrived in Tunisia in disarray. Tactical initiative passed to the Axis forces. Some Allied troops, notably the British 78th Division and CCB, U.S. 1st Armored Division, were hard used in resulting combat. Others, including the U.S. 1st Infantry and 34th Infantry Divisions, were jumbled in the haste and confusion of pell-mell advance. By the end of January, the British First Army, General Anderson commanding, was positioned in northwestern Tunisia, with the British V Corps on the North, French XIX Corps in the center, and U.S. II Corps in the south. Forces assigned to II Corps included the 26th Infantry and 18th Infantry Regimental Combat Teams of the 1st Infantry Division, 1st Armored Division less its CCB, and the 168th RCT of the 34th Infantry Division. CCB, 1st Armored Division and the remainders of the 1st Infantry Division and the 34th Infantry Division were attached to the French XIX Corps.

The U.S. 1st Infantry Division was the unit George Marshall had helped to train in France in 1917 and 1918. Activated in May of 1917, maintained on the rolls throughout the 1920s and 1930s, the division had been involved in the maneuvers of 1939, 1940, and 1941, and had been shipped overseas in June 1942. Nominally a Regular Army division, the 1st Division had, by early 1943, received a substantial infusion of manpower from other sources.

The 1st Armored Division was a more recent creation of the the Army. GHQ activated the Armored Force in July 1940, under Brigadier General Adna R. Chaffee, to develop doctrine and materiel for mechanized warfare. To supervise training and command in the field, I Armored Corps, and two armored divisions were brought into being at about the same time. Both armored divisions were originally formed with a reconnaissance battalion of armored scout cars, two regiments of light 37-mm gun tanks, a regiment of medium 75-mm gun tanks, and one mounted infantry regiment of two battalions, a field artillery regiment, an engineer battalion, and signal, ordnance, quartermaster, and medical units. The 1st Armored Division was activated on 15 July 1940 from Regular Army cadres, and subsequently filled with Selective Service inductees. Stationed at Fort Knox, and advantaged by Chaffee's earlier experimentation, the 1st Armored developed techniques and standards for tank gunnery, and advanced methods for using artillery with mobile forces. Within a year, although still short of personnel, and lacking much of its equipment (the Army at the time had only 66 medium tanks for its five armored divisions, less than a third of what it needed for training), the division was able to participate in the Louisiana and Carolina maneuvers, marching long distances, mounting simulated attacks

by day and by night, performing supply and maintenance operations on the move, and learning to live in the field.

When I Corps was ordered to the Southwestern U.S., 1st Armored moved out there for a short period of desert training. Major General Orlando Ward, promoted after the Louisiana and Carolina maneuvers, assumed command of the division on 1 March 1942, just as the reorganization of the division into the Combat Command structure got under way. An artillery officer of the 1st Armored Division remembers its desert training as the most valuable his unit received before its baptism of fire, precisely because the environment was so harshly unforgiving, and the opportunities to stretch men and machines as wide as the horizons.[7] It was there, he believes, that his unit worked out basic techniques for moving, shooting, and communicating as part of a combined arms team. Although the division was understrength, and underequipped, and although the equipment it had was, in some cases, relatively primitive, it had enough, he thought, for units to learn lessons on how to fight that later proved valid in combat. Unfortunately, the division stayed in the desert only a month or so.

The 1st Armored Division left the desert for Fort Dix in April 1942, and there received a massive influx of individual replacements to bring it to its authorized strength of 14,620. The division was then shipped to Northern Ireland for 5 months of reequipping and further training, with stress on small-unit proficiency and gunnery. Training in Europe was governed by Headquarters, II Corps, commanded by the newly promoted Lieutenant General Mark W. Clark. Divisional participants judged that their training in Ireland improved tank-artillery cooperation, but thought it slighted tank-infantry cooperation, and air-ground techniques. In late autumn the division embarked for North Africa in OPERATION TORCH. The 1st Armored went into North Africa with 105-mm self-propelled howitzers, two battalions of 37-mm gun tanks, three battalions of low-velocity 75-mm gun tanks, and one battalion of early-model Sherman medium tanks. Brief actions against French forces in November reinforced their confidence in that materiel, and set them up for surprise when they encountered German armor in February 1943.

The 34th Infantry Division was a National Guard Division federalized in February 1941. Its infantry regiments were from Iowa, Minnesota, and North Dakota. Typical was the 168th Infantry, the lineage of which extended back to an Iowa Volunteer Regiment that fought with Grant at Vicksburg, and marched with Sherman through the Carolinas.

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7 General Donald V. Bennett, USA (Ret.), conversation with the author 15 August 1990.

Mobilized in 1917, the 168th fought in France as part of the 42d Rainbow Division, and its veterans carried back to their home towns pride in the 168th that made National Guard recruiting and community activities easy to promote. Most men of the 168th were descendants of immigrants from northern Europe who built the towns of Atlantic, Council Bluffs, Glenwood, Red Oak, Villisca, Shenandoah, and Carlinda in the rolling farmland of southwestern Iowa. In these communities the citizens purchased shares to construct armories for their unit of the 168th Infantry, and the state government paid rent to the shareholders. An armory was a community asset: offices, a drill hall resembling a basketball court, supply rooms, and facilities for reunions, dances, banquets, and patriotic celebrations. During the 30s, Guardsmen in the 168th were mostly single, age 18 to 35. Each received one dollar per training session, which typically took place Monday evening, and consisted of practicing the manual of arms and close order drill. Occasionally there would be extended order drill outdoors on a football field, or a town square. Summers, the Regiment assembled at Camp Dodge, Iowa, for two weeks of training. In the summer of 1940, the entire division concentrated at Camp Ripley, Wisconsin, and trained with new urgency and seriousness. When the Guardsmen returned to their armories, they learned that the government had doubled their training time, and introduced tactical subjects into their Armory training. When they were called up the following February, two-thirds were high school graduates, and one-third had education beyond; captains were typically 35 to 45 years old, and there were senior officers who had served in World War I. Among the younger men, many had joined recently to avoid the draft.

The 34th Division assembled at Camp Claiborne, Louisiana, which was still under construction. Living in tents, the men began the GHQ training program, hampered by shortages of equipment with which to train. Stovepipes simulated mortars, and trucks bore signs proclaiming them tanks. In April, draftees from all over the country arrived to bring the division up to strength, and to launch its training in earnest. The division participated in two maneuvers in Louisiana, a corps maneuver in June, and the army maneuvers in August. In August a Regular Army officer took command of the division, and when he was promoted in January 1942, the division command was assumed by Major General Charles W. Ryder, another Regular. The division then shipped to Northern Ireland, the first American division to arrive in Europe. The division continued its training in Ireland, concluding with amphibious exercises in Scotland just before OPERATION TORCH, and its landing near Algiers.

Units from the 34th Infantry and 1st Infantry Divisions, and the 1st Armored Division, were assigned to II Corps, then under command of Major General Lloyd R. Fredendall. On 25 January, Eisenhower appointed General Anderson of the British First Army as commander of all Allied ground forces in Tunisia, and directed him to shore up the meager French forces of XIX Corps, then holding the Fondouk and Faid passes, and the town of Gafsa, a road hub. General Anderson's command and control arrangements were inauspicious: the French refused to serve under British command, and Fredendall considered his corps autonomous. Anderson assigned to Fredendall's II Corps a sector of the Algerian-Tunisian frontier extending from Fondouk southward to Gafsa, setting the stage for the series of swirling armor actions known as the Battle of Kasserine Pass, that developed in four phases.

1. Phase 1: Faid, 30 January-1 February 1943

In the center of the II Corps sector were two passes; through one ran the road from Sbietla to Faid, and through the other, known as the Rebaou defile, ran the road from Sidi Bou Sid to Maknassy. These two defiles were considered critical terrain by *Oberst-general* von Arnim, commanding *Panzer Armee Fünf*, who had a "nightmare" that Eisenhower's armor would debouch through them, and thrust 80 miles to seize the coastal town of Sfax, severing General Rommel's supply lines, and sealing the fate of *Panzer Armee Afrika*, then beginning to build defenses along the Mareth Line on the Tunisian-Libyan frontier against the expected onslaught of the British Eighth Army. The first German division from *Panzer Armee Afrika* to enter Tunisia, and thus to come under von Arnim's command, was the veteran *Panzer Division 21*, which Von Arnim ordered to take Faid, and to control the pass there. On 30 January the division attacked, and on 31 January overwhelmed 1,000 French troops in position around Faid, in the right-center of Figure A-4.[8]

The German attack at Faid caught II Corps widely dispersed, its divisions intermixed. One battalion of the 1st Infantry Division was at Gafsa, and a second near Sbeitla. CCA, 1st Armored Division was at Sbeitla, CCB near Tebessa, and CCC southwest of Sidi Bou Sid. Major General Ward, the division commander, was in the vicinity of Sened, accompanying CCD, conducting a II Corps-directed raid on an Italian detachment. CCD was a provisional task force including division artillery headquarters,

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8 Carell, P., *The Foxes of the Desert*, First published as *Die Wüstenfüchse*, Hamburg, 1958. English translation by Savill, M., New York: E.P. Dutton, 1960, pp. 331-339.

one armored artillery battalion, one armor battalion, and one battalion of the 168th Infantry, 34th Infantry Division.

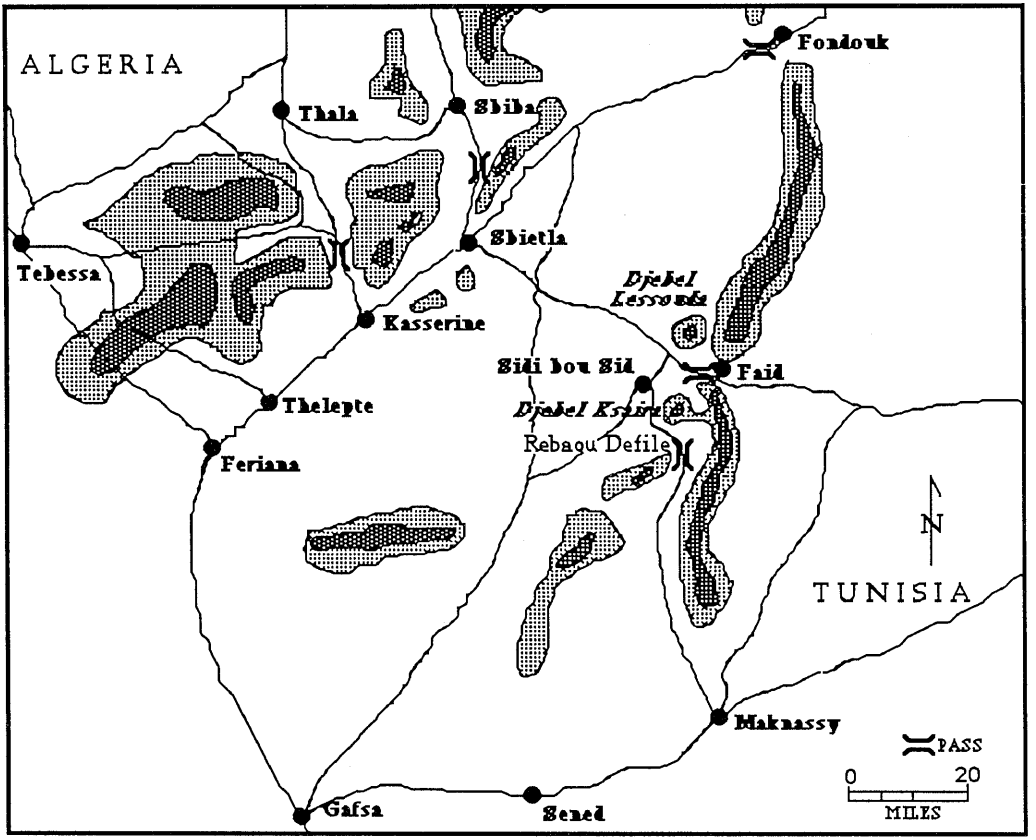


Figure A-4. The Battlegrounds Around Kasserine, Jan.-Feb., 1943

Five hours after the German attack on Faid got underway, General Anderson instructed Fredendall to regain control there. Fredendall communicated directly with CCA, and ordered it to reconnoiter. The two scout units dispatched reported (erroneously) that the Germans controlled both the Faid and the Rebaou defiles, whereupon CCA decided to counterattack from Sbietla. As CCA moved eastward, however, German aircraft bombed and strafed its units, disrupting their advance. CCA called for American air, but when the Army Air Force got on the scene, it bombed the CCA command post, and American antiaircraft gunners shot down an American plane. That night CCA advanced half the

distance to Faid. On the morning of 31 January, CCA launched attacks by two small tank-infantry task forces, but these were again pummeled by German air and by German artillery as well. CCA tried again for Faid the next day, but was again stopped. CCC secured the Rebaou defile. At that juncture, both sides ceased offensive action; the Germans remained in control of the pass at Faid.

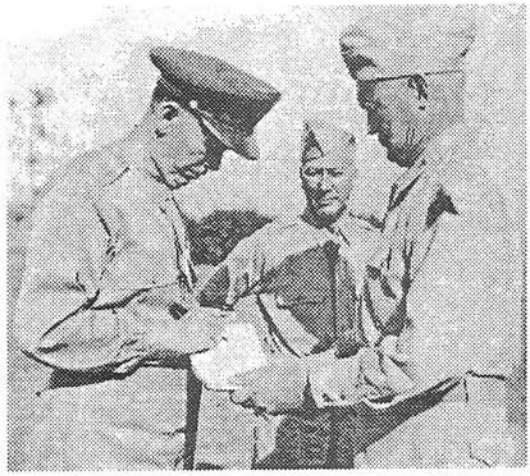


Figure A-5. Gen. Marshall (l.), Maj. Gen. Fredendall (c.) and Maj. Gen. Crittenberger (r.), 1942

2. Phase 2: Sidi Bou Sid, 2-16 February

As reinforcements from the U.S. 1st and 34th Infantry Divisions reached II Corps, units were thrust forward piecemeal, so that the spread and intermixture of divisions was exacerbated. To guard against a German advance beyond Fondouk, Fredendall dispatched CCB, 1st Armored Division, to reinforce the British and French there. He directed 1st Armored Division to block any German attempt to advance from Faid or Maknassy, so Ward positioned forces on hills (*djebel*) controlling the western exits from the Faid and Rebaou defiles, and stationed mobile reserves in and around Sidi Bou Sid. In the second week of February, II Corps dispositions were as follows:

> ***Djebel Lessouda:*** Lt. Col. John K. Waters[9] of the 1st Armored Division, commanding a task force of one company of 15 tanks, some

9 Lt. Col. Waters was the son-in-law of Maj. General G.S.Patton, Jr.

scouts, a tank-destroyer platoon, and a battery of self-propelled 105-mm howitzers, plus the 2d Battalion, 168th infantry, less one rifle company.

Djebel Ksaira: Col. Thomas D. Drake, Commander of the 168th Infantry, with his 3d Battalion, plus one rifle company of the 2d Battalion, and miscellaneous troop units, including a cannon company, a band, engineers, medics, several antiaircraft guns, and a few artillery pieces--in all about 1,660 troops.

Sidi Bou Sid: CCA, 1st Armored Division. CCA headquarters, plus a task force under Lt. Col. Louis Hightower, with 51 tanks, 12 tank destroyers, and two artillery battalions, missioned to support Waters. Nearby, the 1st Armored Division Reconnaissance Battalion, missioned to support Col. Drake.

Sbietla: 1st Armored Division command post, and division reserve: one battalion of infantry, one battalion of tanks, one company of tank destroyers.

20 miles NE Sbietla: CCC, 1st Armored Division. One armored infantry battalion.

Feriana and Thelepte: 26th Infantry, 1st Infantry Division, plus 1 tank battalion, 1st Armored Division.

Gafsa: One U.S. Ranger battalion, artillery and tank destroyer units, plus an armored car battalion of the 1st Derbyshire Yeomanry.

Tebessa: II Corps HQ. Corps reserve: several artillery and tank destroyer battalions, plus 1st Battalion, 168th Infantry.

General Anderson, based on intelligence predicting a German attack northwest from Fondouk, assigned the 34th Infantry Division (-) and the British 6th Armoured Division to the French corps north of II Corps, and directed Fredendall to be prepared to withdraw from Gafsa, and to defend the passes north of Kasserine and Sbietla. In actuality, Kesselring, the German commander for the Mediterranean theater, had concerted with his two field army commanders, Rommel and Von Arnim, a plan for an offensive aimed at destroying American units in Tunisia that would open with von Arnim's attacking at Sidi Bou Sid, and Rommel's thereafter driving through Gafsa and Tebessa.[10] Germans who were present at planning conferences recall that von Arnim supported a limited objective attack, while Rommel, characteristically, wanted to await the results of the initial actions before determining how far and fast German armor could move, but clearly entertained a more expansive concept.[11] Relations between the two German generals were not, in any

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10 Kesselring, A., *Kesselring: A Soldier's Record*, New York: William Morrow, 1954, pp. 170-184.

11 Irving, D., *The Trail of the Fox*, New York: Avon Books, 1977, pp. 318-331.

event, warm, and cooperation never close; Kesselring, their immediate superior, described them both as "pigheaded."

On 12 February 1943 Colonel Drake's task force on *Djebel Ksaira* received 200 replacements, but some lacked weapons, quite a few had never fired a rifle, and none had entrenching tools or bayonets. On 13 February there arrived several truckloads of "bazookas," shoulder-fired antitank rockets and launchers, that no one under his command had ever seen before. Drake determined to figure out how to use the weapon, and to start a training program on the 14th. The weather was cold, windy, and rainy.

In the early morning of 14 February, amid a driving sandstorm, 200 German armored vehicles, led by a unit equipped with the *Panzerkampfwagen V* "Tiger," Germany's most formidable tank, drove out of Faid, and split into two columns, one turning north to encircle Waters on *Djebel Lessouda*, and the other south to encircle Drake on *Djebel Ksaira.* Simultaneously, another German armor column advanced north from Maknassy toward Sidi Bou Sid. The American forces, their vision obscured, countered these moves with neither fire nor movement.

By 0730, the storm let up, and CCA directed Hightower to react. As Hightower's forces got underway for *Djebel Lessouda*, however, German air struck Sidi Bou Sid, and made a shambles of CCA's command and control facilities there. Hightower's attack started with 47 tanks; by mid-afternoon, all but seven of these had been destroyed. The 1st Armored Division's Reconnaissance Battalion, which was supposed to support Drake, had its lead company overrun and captured, whereupon the remainder of the unit retired toward Sbietla. Commander, CCA, also decided to pull back, and requested that division hold open the road from Sbietla to Faid. Major General Ward sent forward an infantry battalion under command of Colonel William B. Kern to block the road intersection 11 miles east of Sbietla, a place that became known as Kern's Crossroads.

Around noon, CCA began its move, but came under heavy air attack, and its withdrawal became a rout. All that afternoon, remnants of CCA fled in disorder toward Sbietla. Initial reports had it that more than 50 officers and 1,500 men had been lost; the final count for CCA on 14 February was 6 killed, 32 wounded, and 134 missing. But beyond Kern's Crossroads on the Sbietla Plain, there were wrecked, burning, or abandoned, 44 American tanks, 59 half-tracks, 26 artillery pieces, and at least two dozen trucks.

Rommel urged von Arnim to continue the attack that night, but von Arnim preferred to ambush the inevitable American attempt to relieve the two task forces trapped on the heights. The U.S. command played into von Arnim's hands: Waters and Drake were ordered to hold fast, and Fredendall and Ward assembled forces for a counterattack to rescue them on 15 February. To reinforce Ward for the effort, Fredendall recalled one tank battalion from CCB, and sent to Sbietla the tank battalion from Thelepte, plus artillery and tank destroyers from Feriana.

In the meanwhile, to the south, Gafsa was precipitously abandoned, and when Allied combat troops began to move through Feriana and Thelepte, unnerved combat service support troops there began to destroy depots and supply points. General Anderson directed that the French corps move 34th Division (minus the 168th Infantry) to block the Sbiba pass, and that II Corps commence preparations to defend the Kasserine Pass.

Ward's counterattack was to be mounted by CCC, led by the tank battalion that had marched down from CCB during the night, under the command of Lt. Col. James D. Alger. The plan was for Alger's tanks and CCC's armored infantry to marry up at Kern's Crossroads, attack to retake Sidi Bou Sid, and move thence to relieve the beleaguered task forces on the heights to the north and south. As Alger reconnoitered his route, German air struck, so preparations proceeded amid much confusion. Nonetheless, the attack, when it got underway at 1240 on 15 February, was a marvel of precision: three parallel columns of tanks advancing mile after mile across the Sbietla Plain towards Sidi Bou Sid, followed by two battalions of self-propelled artillery with outriders of tank destroyers--half-tracks mounting 75-mm guns--and infantry in the rear mounted in half tracks and trucks, with several mobile antiaircraft guns for protection.

Unfortunately for CCC, the Germans had read the terrain well in preparing von Arnim's ambush: the symmetry of the American attack was soon disrupted by the first of three *wadis*, dry stream beds, crossing the axis of advance at right angles. As U.S. tanks milled around seeking a crossing point, German dive bombers struck, and departed, only to return again at the second gully. At the third, German artillery joined the fray. Finally, as Alger's units sought to regroup amid this rain of fire, German tanks of *Panzer Division 21* and *Panzer Division 10* emerged from defilade, and swept to encircle. At 1800, CCC ordered all units to disengage, and to fall back to Kern's Crossroads. CCC's infantry and artillery escaped with relatively minor damage, but the tank battalion was wiped out. Alger was taken prisoner, 15 of his officers and 298 soldiers were missing, and 50 tanks were

destroyed. In two days of battle, the 1st Armored Division had lost 98 tanks, 57 half-tracks, and 29 artillery pieces.

At dusk on the 15th, a pilot dropped a message from Ward to the troops on *Djebel Lessouda* instructing them to exfiltrate during the night. But by that time, Waters had been taken prisoner. Major R.R. Moore of 2d Battalion, 168th Infantry, marched to Kern's Crossroads with about 300 men. The remainder were captured by the Germans.

Drake on *Djebel Ksaira* received a similar message the afternoon of 16 February. That night Drake attempted Moore's feat, only to be intercepted by the Germans attacking Sbietla, and taken prisoner; only a handful of his force reached safety. The units of the 168th Infantry on *Djebel Lessouda* and *Djebel Ksaira* sustained losses of 2,200 men; of these, 200 of the soldiers reported missing in action were from the small towns in southwest Iowa from which the regiment had sprung.

3. Phase 3: Sbietla, 16-17 February

The state of the 1st Armored was such that a vigorous German pursuit of CCC on the 15th would almost certainly have occasioned disaster. But Rommel and von Arnim were still not agreed on what should come next, and Kesselring was away from his headquarters visiting Hitler's headquarters in East Prussia. German command indecision provided 1st Armored a fortuitous breather.

On 16 February Fredendall ordered Ward to defend the Feriana, Kasserine, and Sbietla areas, and returned CCB to the division. Ward repositioned CCB to defend southeast of Sbietla, and pulled CCC and CCA back from Kern's Crossroads to take up positions on CCB's flank. For the first time, 1st Armored Division was concentrated, and able to fight as a division. Its respite from combat was short-lived. On the night of 16-17 February, behind a reconnaissance screen, von Arnim's armor attacked toward Sbietla in three columns, firing as they advanced. Forward of the division's defensive positions, the Germans became distracted in rounding up Drake's units coming off *Djebel Ksaira*, and did not press the attack.

Sbietla came under artillery fire. Commander, CCA, seeking to avoid the difficulties experienced at Sidi Bou Sid, displaced his command post to a place west of the town. Many American troops in and around the town interpreted this departure as a signal for a wholesale evacuation, panicked and fled. Martin Blumenson provides this explanation:

> Night fighting was a new and terrifying experience for most of the men. The solidity of the defensive line was more apparent on a map than on the ground. Because of the darkness, the troops were not well placed. Because of the haste of the withdrawal, they were not well dug in. The harrowing events of three days of defeat had exhausted many soldiers, morally and physically. Uncertain and nervous, fatigued and confused, hemmed in by widespread firing that seemed to be all around them, believing that the Germans were already in Sbietla, demoralized by the piecemeal commitment and intermingling of small units, no longer possessing a firm sense of belonging to a strong and self-contained organization, and numbed by the pervading attitude of weariness and bewilderment, many men lost their confidence and self-discipline.

At 0130 on 17 February, Fredendall ordered Ward to hold Sbietla until 1100 that morning, or longer if feasible, to allow time for defenses to be prepared on the Sbiba road to the north. Fredendall dispatched the 19th Engineer Regiment to the Kasserine Pass to begin construction of road blocks and minefields, and directed Ward when he left Sbietla to retire through the Kasserine Pass toward Thala. Stark's 26th Infantry was to defend Feriana until compelled to retreat toward Tebessa.

But by then Rommel was on the move. Italian and German units advanced from Gafsa, captured Feriana and entered Thelepte about noontime on 17 February. Stark's units fell back toward Tebessa. Fredendall decided to move his command post outside of Tebessa, but its displacement occasioned a panic not unlike that precipitated by CCA in Sbietla, and put Fredendall out of communications with his subordinates for 6 hours.

The next serious attack on Sbietla materialized around 1100 on the 17th; although the 1st Armored line units held their positions well, there was renewed panic within the town. At 1500, Ward directed CCA to move north to Sbiba, and there to take up blocking positions in the pass to cover the arrival of the 34th Division and British armor being rushed to that vicinity by the French corps. CCC and CCB withdrew per the earlier plan to Kasserine. The Germans entered Sbietla at 1700.

4. Phase 4: Sbiba and Thala, 18-22 February

That evening (17 February) von Arnim ordered *Panzer Division 21* to remain at Sbietla, sent a task force north toward Sbiba on the heels of CCA, and dispatched *Panzer Division 10* to a reserve position near Fondouk. Rommel called von Arnim to urge a thrust at Tebessa, but von Arnim was uninterested. Rommel then appealed to Kesselring, who agreed with Rommel, and urged the Italian *Commando Supremo* to shift the armored divisions from von Arnim to Rommel, and to direct Rommel to attack through Tebessa

toward the Algerian coast. Kesselring believed that Rommel could thereby unhinge Eisenhower's position in northern Tunisia, deal decisively with British First Army, then return to defeat Eighth Army at the Mareth Line. *Commando Supremo* approved Kesselring's plan, and reassigned the *Panzer Division 21* and *Panzer Division 10* to Rommel. Rommel promptly ordered the former to strike northward to Sbiba, and the latter to move to Sbietla. Rommel's *Afrika Korps* was to attack Kasserine. *Panzer Division 10* was to be prepared to reinforce whichever attack made the most headway.

On 18 February CCA of the 1st Armored Division, having covered elements of the 34th Infantry Division and the British 6th Armoured Division while they established defenses south of Sbiba, headed for a divisional assembly area just south of Tebessa to join CCC. CCB moved through the 19th Engineers, who had been laying mines between the village of Kasserine and the Pass about 5 miles away, and marched to the assembly area near Tebessa. The 19th Engineers thereupon moved through the Kasserine Pass, and took up defensive positions covering its western exit astride the road forking left to Tebessa; Col. Moore, commanding the 19th Engineers, had there a task force of about 200 engineers and infantrymen armed with small arms and automatic weapons, plus three batteries of artillery, and a battalion of tank destroyers. The road forking right to Thala was defended by a battalion of the 26th Infantry. Most of the troops in both positions were inexperienced and jumpy; Martin Blumenson has described their performance as "characterized by nervousness, fear, lack of control, the absence of information, and an unwillingness to perform normal missions in a time of danger." When German reconnaissance units probed the Kasserine Pass the evening of 18 February, some of Moore's engineers fled. Fortunately, the same evening General Anderson ordered the British 26th Armoured Brigade to reinforce the infantry battalion on the Thala road. Fredendall then sent Colonel Stark of the 26th Infantry to take charge of all units defending the Pass.

Stark arrived at the Kasserine Pass on the morning of 19 February just as the Germans advanced; attempting surprise, a German infantry battalion of *Afrika Korps* moved on foot through the Pass without artillery preparation, and when they encountered defensive fires, were promptly reinforced by tanks, mounted infantry and 88-mm cannons. Stark was able to stop the attack by throwing into the fight British mortars and scouts, and a battalion of the U.S. 9th Infantry Division just arriving from Algiers, which he separated into companies, one for each flank of Moore's position, and one for the Thala Road defense.

That same morning of 19 February, the 34th Division reinforced by the 18th Infantry RCT of the 1st Division,[12] and fighting adjacent to the British 6th Armored Division, both divisions operating under the French corps, had repulsed an attack on Sbiba by *Panzer Division 21*. Rommel established his headquarters in Kasserine, and ordered *Panzer Division 10* to attack in the Kasserine Pass. Displeased with the latter's slow response, Rommel then committed the Italian *Centauro* division, and ordered *Afrika Korps* to open the Kasserine Pass and to attack Tebessa; *Panzer Division 10* was to follow, and to strike at Thala.

On the evening of 19 February, the 16th Infantry Regiment of the 1st Division, accompanied by Major General Terry de la Mesa Allen, the division commander, marched through Thala into the Kasserine Pass defenses. Fredendall put Allen in charge of coordinating the several units there, and directed CCB, 1st Armored to move down the Tebessa-Kasserine road to back up Col. Moore and his task force.

On the 20th, *Panzer Division 21* attacked once more toward Sbiba, and once more was turned back. But *Afrika Korps* made progress beyond the Kasserine Pass. German infantry infiltrated to high ground on both sides of the pass, and brought effective fires down on the defenders. The 19th Engineers, deluged by *Nebelwerfer* rockets, a shrieking, terrifying, if not particularly lethal form of ordnance, fell apart, and Moore's defenses disintegrated. CCB arrived just in time to block a breakthrough toward Tebessa. The defenders on the Thala road, although shaken, held.

Rommel was now running out of time. On 20 February, Montgomery's Eighth Army, regrouped after its long advance across Libya, and resupplied, commenced its attack into southern Tunisia. Rommel directed his commanders to continue to pressure Sbiba, but to put their main effort against Thala. In fierce fighting on 21 February, *Afrika Korps* gained some ground against CCB along the Tebessa Road, and all but eliminated the U.S. infantry units defending the Thala Road. Rommel went forward and assumed direct control of the attack toward Thala. The British 26th Armoured Brigade resisted valiantly, but after losing most of its tanks, withdrew to a final defensive position in front of the town. Fighting continued until after darkness, and ended when the Germans broke off, and withdrew about 1,000 yards to reorganize. *Panzer Division 10* at that point had

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12 In an interview with the author in April 1991, a veteran who commanded a rifle company of the 18th Infantry in that battle stated that he was unaware that 18th was subordinate to the 34th Division. He characterized command arrangements throughout February as a "confused mess."

forward at least 50 tanks, 2,500 infantry, 30 artillery pieces, and the notorious *Nebelwerfer*. Only 20 British tanks, a British infantry battalion, and American stragglers, stood between Rommel and his objective. Thala seemed certain to fall.

About midnight, however, the U.S. 9th Division Artillery, with three artillery battalions and two cannon companies, having marched from west of Algiers 735 miles in 100 hours, occupied positions covering Thala. The following morning, 22 February, as *Panzer Division 10* renewed its attack, it was greeted with a devastating barrage. The British tankers then sortied from the defenses, and although they lost five more tanks, they bluffed the Germans into concluding that the force at Thala had received substantial reinforcements during the night. The weather had cleared, and Allied air became active. Rommel, increasingly edgy about reports from Mareth, gave permission to delay further attacks.

CCB was at the same time coping successfully with a battalion of German and Italian troops that during the night had infiltrated to its rear, and captured several American howitzers and antiaircraft guns, creating considerable consternation in and around Tebessa. Fredendall was away from his command post when someone there decided that II Corps headquarters should displace to prevent its being overrun, and by the time Fredendall returned, many clerks and radio operators were already driving toward Algeria. Concluding that defenses were collapsing, Fredendall turned over the units defending Tebessa to Ward, and directed his attention to the contingency of an Axis breakthrough at Thala and Tebessa. Fredendall was not the only commander engaged in prudence. General Anderson sent his headquarters rearward, and moved the divisions defending Sbiba to the south, to defend against a German attack north from Thala. Sbiba then lay open to *Panzer Division 21*.

First Army and II Corps were saved by the Germans. During the day of the 22d, Kesselring had met with Rommel at the latter's command post near Kasserine. Kesselring found him "dispirited. His heart was not in his task and he approached it with little confidence. I was particularly struck by his ill-concealed impatience to get back as quickly and with as much unimpaired strength as possible to the southern defense line. . . ."[13] Kesselring's interview with von Arnim the same day "was even less satisfactory." Kesselring thereupon called off the offensive, and released Rommel and his forces for the defense of Mareth.

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13 Kesselring, op. cit., p. 181.

The following morning, 23 February, the German and Italian divisions withdrew, laying mines and creating obstacles to slow pursuit. But the Allies were not prepared to follow; cautious reconnaissance commenced on the afternoon of 23 February, but it was not until the 25th that Allied commanders understood that, miraculously, Rommel's offensive was over. By early March, the situation resembled that of early February: Allied forces had reoccupied Gafsa, Feriana, Thelepte, Sbietla, and Sidi Bou Sid, but the Germans controlled Maknassy and Faid. There was one major change in II Corps: George S. Patton, Jr., newly promoted Lieutenant General, was in command.

German casualties from 30 January-22 February were 200 killed, 550 wounded, and 250 missing; they lost 20 tanks, 6 half-tracks, 14 guns, and 61 motor vehicles. The Germans reported capturing 4,000 Allied prisoners, and 62 armored vehicles, 161 trucks, and 36 guns. But American losses were much higher: of the approximately 30,000 Americans who participated in the fighting under II Corps, some 300 were killed, 3,000 wounded, and nearly 3,000 missing. To bring the units of II Corps back to strength, 7,000 replacements were required. II Corps lost nearly 200 tanks, 100 half-tracks, 200 artillery pieces, and 500 trucks, plus large amounts of supplies of all categories--more than the combined stocks of American depots in Algeria and Morocco.

II Corps exhibited confusion at all ranks resulting from divided and redivided units, and ever-changing improvisations with the "chain" of command. The concept of operations seemed as unclear as the command arrangements. Initially, when the 1st Armored had ample maneuver room, it dispersed its combat power, and held out meager reserves; only later, when it was cramped among the mountains, and unable to exploit its mobility, did it concentrate significant armor. True, U.S. forces fought outnumbered, U.S. troops were inexperienced, and the terrain and the enemy daunting. But the use of the terrain was amateurish--e.g., lack of mutual support between adjacent positions; unguarded, dominating heights--and available U.S. combat power was rarely mustered to counter enemy initiatives. Air-ground cooperation was deplorably bad.[14]

> American troops in North Africa enjoyed very little support from aircraft and suffered many attacks at the hands of friendly fliers, all because no solutions had been developed for the problems identified in the 1941 maneuvers of Louisiana and Carolinas.

Above all, the German commanders, not Fredendall, set the tempo of combat.

The Battle of Kasserine Pass was a bleak chapter in the history of the U.S. Army.

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14 Blumenson, "Kasserine Pass," op. cit., p. 262.

☆ U.S. GOVERNMENT PRINTING OFFICE: 1994 555-001/82066

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