See Nato and the Warsaw Pact, page 34 . . . .

Report Documentation Page

Form Approved
OMB No. 0704-0188

1. REPORT DATE	2. REPORT TYPE	3. DATES COVERED
SEP 1978		**00-00-1978 to 00-00-1978**

4. TITLE AND SUBTITLE	5a. CONTRACT NUMBER
Military Review. Number 9. September 1978	5b. GRANT NUMBER
	5c. PROGRAM ELEMENT NUMBER
6. AUTHOR(S)	5d. PROJECT NUMBER
	5e. TASK NUMBER
	5f. WORK UNIT NUMBER
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) **Army Command and General Staff College,100 Stimson Ave,Fort Leavenworth,KS,66027**	8. PERFORMING ORGANIZATION REPORT NUMBER
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)	10. SPONSOR/MONITOR'S ACRONYM(S)
	11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release; distribution unlimited

13. SUPPLEMENTARY NOTES

14. ABSTRACT

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT **unclassified**	b. ABSTRACT **unclassified**	c. THIS PAGE **unclassified**	**Same as Report (SAR)**	**102**	

MR

THE PROFESSIONAL JOURNAL OF THE US ARMY

Published by

US ARMY COMMAND AND GENERAL STAFF COLLEGE

Fort Leavenworth, Kansas 66027

Military Review

VOLUME LVIII SEPTEMBER 1978 NO 9

CONTENTS

Cover A 52 ton *Chieftain* tank during a recent NATO exercise

MILITARY REVIEW is published monthly in English and Spanish and quarterly in Portuguese Use of funds for printing this publication approved by Headquarters, Department of the Army, 30 May 1978. Controlled circulation postage paid at Leavenworth, KS 66048 and Topeka, KS 66608 Subscription $12 00 per year US and APO/FPO, $14 00 foreign Single copies $1 50 US and APO/FPO, $1 75 foreign Address all mail to Military Review USACGSC, Fort Leavenworth, KS 66027 Telephone (913) 684-5642 or AUTOVON 552-5642 Unless otherwise stated, the views herein are those of the authors and are not necessarily those of the Department of Defense or any element thereof Basis of official distribution is one per general officer and one per five field grade officers

US ISSN 0026-4148

FIRST CLASS
PERMIT, No 4
FT. LEAVENWORTH, KS

BUSINESS REPLY MAIL
NO POSTAGE STAMP NECESSARY IF MAILED IN THE UNITED STATES

Military Review

U.S. Army Command and General Staff College

Fort Leavenworth, Kansas 66027

FIRST CLASS
PERMIT No 4
FT. LEAVENWORTH, KS

BUSINESS REPLY MAIL
NO POSTAGE STAMP NECESSARY IF MAILED IN THE UNITED STATES

Military Review

U.S. Army Command and General Staff College

Fort Leavenworth, Kansas 66027

ON ASSUMING ONESELF OUT OF THE PROBLEM

It has long been held that paramount among the sins which the military student can commit is drawing up assumptions which effectively solve the problem he has been assigned to study.

Looking over manuscripts, as well as published articles, we are forced to the conclusion that this trait is not exclusive to those who pursue wisdom at service schools. For instance, all too many authors at least tacitly assume that future battle will take the forms of World War II, Korea, Vietnam or some combination thereof. The fabric of their narrative is woven from two sides maneuvering over terrain which is obviously open and rather rural. There is no combat in cities. What the civilian population is doing meanwhile is left somewhat, if not absolutely, vague. No one disrupts essential services even to the extent that we have observed this having been done in peacetime.

And on both sides all citizens loyally support their governments—there are no dissidents, no voices urging caution, no politicized mobs in the streets in this assumed arena. There is no battle for men's minds. Conflict is between two monolithic, easily identifiable forces—frequently labelled clearly "good" and "bad" or "us" and "them."

This same sort of clear-cut tidy structure often flows over into discussions of strategy and international relations other than armed conflict. Complex economic arrangements transcending political and geographic boundaries are ignored. There are no shades of gray nor true dilemmas.

What we all need is to have our thinking stimulated by some new, and perhaps unnerving, assumptions. Most of all, it seems that there is more to be gained by assumptions which create problems for authors and readers to wrestle with than by those which solve perplexities

Let's unleash our minds and pens from the tyranny, or the comfort, of unwarranted assumptions some of which have been ennobled with titles such as fact, truth or (Heaven forfend!) doctrine.

(An ageless editorial from the February 1973 *Military Review*.)

DEPARTMENT OF THE ARMY
MILITARY REVIEW
U.S. ARMY COMMAND & GENERAL STAFF COLLEGE
FORT LEAVENWORTH, KANSAS 66027

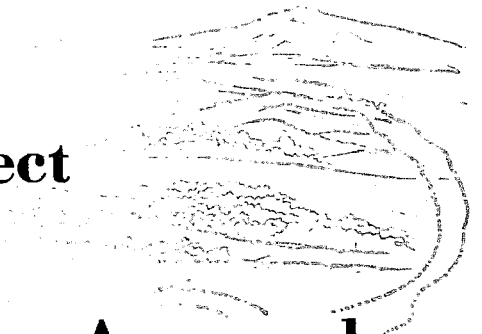
OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE $300

POSTAGE AND FEES
DEPARTMENT OF THE
DOD 314

CONTROLLED CIRCULATION
UNIV MICROFILMS
300 N ZEEB RD
ANN ARBOR MI 48106

CGSC LBL 5
15 FEB 78

The indirect approach is a practical strategy for the US Army, regardless of the enemy or location of the battlefield. The United States must identify enemy strengths and avoid them while identifying and exploiting enemy weaknesses. US forces must do the unexpected and seek victory through maneuver. The United States as the smaller force must avoid attrition battles, for that spells ultimate defeat. Instead, US forces must seek victory through offensive actions like flanking attacks, air and ground envelopment, attacking along the least obvious routes away from enemy strengths, counterthrusts and retrograde operations. US commanders must anticipate enemy reactions and prepare countermeasures. The margin for error is small, but history bears out the success of the indirect approach as a successful strategy which allows a smaller force to engage and defeat decisively a larger opponent without suffering unacceptable losses. The US Army might do well to adopt this approach as the cornerstone of its tactics.



The Indirect Approach

Major Robert F. Helms II, US Army

IN A RECENT article, the offense was described as an imperative for the successful army.[1] The discussion focused primarily on the tactics involved in conducting a successful attack. Because of space constraints, there was no attempt to include a battlefield strategy for guiding the development and application of tactics. A coherent battle strategy is a basic requirement for successful military campaigns. Without it, there is no light to guide commanders in preparing their forces for battle, and confusion and wasted effort often will result.

This article attempts to correct the acknowledged shortcoming of the previous article. It advocates and describes the indirect approach as a practical strategy for the US Army—

regardless of the enemy and location of the battlefield.

A man who permits himself to be drawn willingly into an unfavorable situation is not so bright, not thinking or perhaps both. The same holds for armies. The primary goal of battle planning should not be to seek battle. Rather, it should be to develop a strategic situation that is so advantageous that battle becomes unnecessary for victory. There will be times when this is not possible and combat is required. When it occurs, the object should be to produce a situation in which victory through battle is a foregone conclusion.

It is assumed that the enemy is following similar logic in his approach—that he is attempting to use sound principles of war to maximize his advantages and achieve a decisive victory in the described manner. The problem for the US Army is first to identify the approach being used by the adversary and then develop countermeasures. These must be active. The initiative has to be taken from an enemy who may be numerically superior and armed with equally combat effective weapon systems.

This is best accomplished by identifying and avoiding enemy strengths during battle. The enemy will attempt to exploit his strengths; therefore, it is reasonable to expect his battle plan to be constructed around them. If he is permitted to follow his plan, the opponent should anticipate battle under unfavorable circumstances.

The problem becomes one of disrupting his battle plan, thus denying him the opportunity to use his strengths. This is best accomplished by identifying and attacking enemy weaknesses. When weaknesses are not apparent, positive actions are taken to create exploitable situations. The greatest area of weakness for highly mobile forces is normally located in the rear—lines of communications, supply dumps and command/control facilities. The smaller force usually can attack these targets to distract the enemy from his original plan and cause dislocations of his forces. Both are desirable and often will create new battlefield opportunities which can be used for advantage.

The critical issue to be resolved is that of determining how a smaller force can get at and exploit weaknesses once they have been identified. The frontal assault is not a feasible option. Advanced technologies are producing weapon systems of such lethality that

Major Robert F Helms II is assigned to the 2d Battalion, 321st Field Artillery, 82d Airborne Division, Fort Bragg, N.C He received an M.A. from the University of Louisville, an M A and a Ph.D. from the University of Kansas and an M.M.A.S. from the USACGSC. He has served in Vietnam and Germany, as an instructor at the USACGSC, and with the Combined Arms Training Developments Activity, Fort Leavenworth, Kan. His article "The Offense" appeared in the February 1978 Military Review.

frontal assaults are rapidly becoming past tense.[2] The smaller force must avoid situations where "blood is the price of victory." Even a battle of equal attrition is unsatisfactory, for, by definition, it dooms the smaller force to ultimate defeat.

The solution is to be found in the indirect approach. This strategy seeks to locate or create favorable situations for exploitation. It seeks to avoid enemy strengths and attack weaknesses. The force using this approach does the unexpected. It seeks victory through maneuver. Audacious actions are taken to distract, dislocate and defeat the enemy. It provides numerically smaller forces a proven means of defeating much larger opponents.

Application of the Indirect Strategy

When we are conducting offensive actions, the enemy normally defends. He can be expected to select and occupy the best defensible terrain available. If the battle is being fought against forces using Warsaw Pact doctrine, the defense will consist of forces echeloned in depth—perhaps as many as three defensive belts.

Field Manual 100-5, *Operations*, describes the advantages that a force can accumulate through skillful defensive actions.[3] The manual also states that generals must maneuver their forces "so that in the attack they have concentrated combat power of about 6:1 superiority."[4] The 6-to-1 ratio assumes that the enemy has prepared good defenses. It is not meant to be absolute and is provided as a general guideline. The central problem being addressed is: How can a smaller force go about achieving a force ratio that permits it to engage the enemy with a reasonable chance of success? Several options are available. Some are more apparent than others.

Whenever the enemy has an assailable flank, some type of flanking maneuver is usually preferred. This is a proven method that is well-known to most. Stripped to its basics, it involves fixing the enemy in his defensive positions with a holding attack and using indirect maneuver to move a strong combat force around to attack these positions from either a flank or the rear. With characteristic directness and simplicity, General Patton described this maneuver in the following manner:

When you have bumped, hold him at the point of contact with fire with a third of your command. Move the rest in a wide envelopment so that you can attack him from his rear flank. The enveloping attack should start first. The initial nose attack starts to move forward only when the enemy has properly reacted to the enveloping attack. Then the direct attack can go in easily and fast.[5]

Ground envelopments were the norm during World War II. Vertical envelopments were limited to airborne assaults. The development and widespread use of helicopters have made the vertical envelopment a much more attractive option. Commanders fighting on the modern battlefield should look for opportunities to use a combination of vertical and ground envelopments as an indirect approach to battle. Heliborne forces are ideally suited for striking critical points along routes used for movement. The capture and holding of these points can be used to assist the rapid advance of the

ground envelopment. It also can be used to block enemy attempts to use maneuver in countering the ground envelopment, his attempt to withdraw endangered forces and isolate enemy units.

A favorable situation has been created whenever it is possible to isolate enemy forces and sequentially destroy his combat strength. This permits the smaller force to "whittle" away the advantages of a larger opponent until a manageable combat power ratio is obtained. Further, isolation frequently induces panic and often enables the attacker to achieve a decisive victory without having to "slug" it out.

This is a highly desirable situation and must be actively sought. Aggressive actions should be taken to mold enemy dispositions, terrain and friendly force capabilities into an exploitable situation. Airmobile forces can be used for advantage in creating these situations. However, there are certain dangers associated with their use against armored and mechanized forces.[6] The commander and his staff have to be aware of these, consider the advantages and disadvantages and take calculated risks.

The smaller force cannot afford a frontal assault; therefore, when the enemy is occupying good defensible terrain and does not have an assailable flank, positive actions are required to entice him out of his advantages. He should not be expected to do this willingly. Actions taken must be sufficiently alarming that he considers it necessary to abandon the advantages of the defense.

Commanders, armed with modern weapons and using conventional tactics, can be expected to design their defense in a way that counters the anticipated attack plan of the opponent. Armies normally attack along the route of least resistance, and the defense is usually constructed to place maximum strength against the "perceived" intent of the opponent. Therefore, what appears to be the most obvious route of least resistance will often become the more difficult as a result of enemy defense preparations.

If the attacker proceeds along the obvious route into the "teeth" of prepared defenses, he should anticipate a bloody battle and possess the 6-to-1 combat power ratio discussed earlier. A more preferable solution is to upset the defensive plan of the enemy—to distract and dislocate his preparations. Suitable maneuvers that a smaller force can use for this include the diversionary approach march, counterthrust and retrograde.

Field Marshal Rommel attempted to use a diversionary approach march to distract the British defenses of Tobruk during the June 1942 battle. After failing to overcome British resistance during the first battle for Tobruk, Rommel decided to move his main assault forces eastward past the fortress. The movement was designed to cause a redisposition of the British defense. Once a favorable dislocation had been achieved, his forces:

. . . were to switch back suddenly to the south-eastern front of the fortress, deploy for assault during the night and . . . launch their assault at dawn and overrun the surprised enemy.[7]

Highly mobile formations obviously are required for this maneuver. However, Rommel did not rely on mobility alone, but also attempted to gain surprise with night movements and concentrate overwhelming combat

power at the time and place of his choice.

The counterthrust is another means of drawing the enemy out of prepared defenses. The maneuver involves attacking a target that is sufficiently sensitive to the enemy's well-being, that he is confronted with the choices of either abandoning the defense and responding or suffering a decisive defeat in place. Usually, these targets at the battlefield level consist of those things considered to be the life line of an army—its jugular—for example, fuel, ammunition, lines of communication and command/control. At a higher level, these may be industrial, economic, resource-producing, population and political centers.

Generally, battlefield targets are located closer to the area of the fight and are more important for ongoing combat. Strikes against these will often produce more immediate results on the battlefield but may have less effect on the total campaign. Conversely, attacks against higher level strategic objectives can be expected to have a greater impact on the overall battle, but, since these are not usually as critical to the enemy for the immediate fight, battlefield results may not be forthcoming as rapidly. The smaller force must consider the involved time and space factors when determining the nature of the target to be attacked.

The decision must be made quickly and accurately. There may not be time or resources to correct mistakes. Often, it will become necessary to forsake long-term advantages for short-range expediency. While this is undesirable, real-world conditions may dictate the course to be followed.

Once the enemy has been distracted and abandoned the advantages of the defense, vulnerabilities will occur which the smaller force can exploit. These could be such things as flanking attacks or strikes from the air. It also may be in the form of forcing the enemy to conduct an attack under unfavorable circumstances.

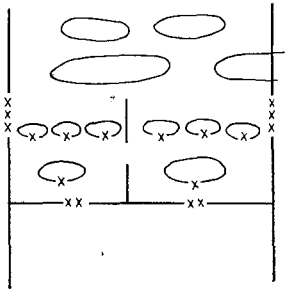
During the conduct of counterthrusts, the smaller force should anticipate the reaction of its opponent and prepare countermeasures. One of the more desirable is the occupation of good defensible terrain and forcing the enemy to attack these positions. When this becomes possible, the smaller force has transformed the recommended combat power ratio requirement from 6-to-1 to 3-to-1—a much more desirable situation. Further, unlike the normal, the initiative in this situation actually belongs to the defending force. The attacker may choose the time, place and method, but he has no choice. He has to accept the disadvantages of the situation and attack.

When the enemy does not have an assailable flank and a counterthrust is not possible, the smaller force should consider a retrograde as a way of drawing the enemy out of his defenses. The enemy can be expected to attack along the route of least resistance and will normally advance whenever his opponent moves away. In this maneuver, the smaller force should attempt to delay into and occupy terrain which lends itself to an active defense. When this is possible and the opponent attacks, it can use the "defensive shield" to reduce the enemy's numerical superiority to an acceptable ratio and, subsequently, its "offensive sword" to destroy him.

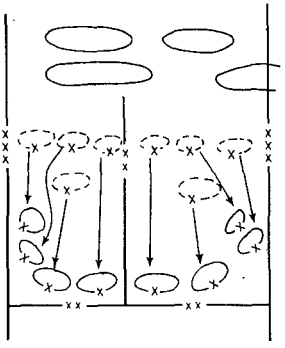
There may be situations when the enemy has concentrated his forces in a strong defense and does not have an

ACTIONS OF A US CORPS TO DISPERSE ITS OPPONENT

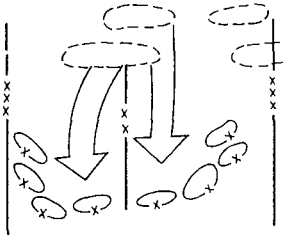
① ENEMY OCCUPYING GOOD DEFENSIBLE TERRAIN



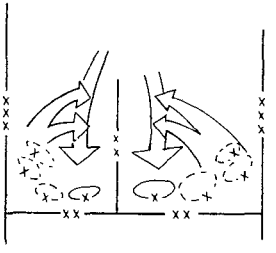
② CORPS CONDUCTS RETROGRADE



③ ENEMY ADVANCES



④ CORPS COUNTERATTACKS



apparent weakness. When this is the situation and it is not possible to entice him into abandoning the defense, the indirect approach can be used to create dispersion of the enemy and thus an exploitable situation (see accompanying figure).

This is essentially a sequential maneuver. Both forces are concentrated initially. The attacking force starts the maneuver by accepting calculated risks and dispersing its combat power across a relatively wide front. Deception measures such as feints, demonstrations, limited objective attacks and economy-of-force activities can be used to minimize the risks that must be taken.

These actions deceive the enemy and lead him to believe that he is being

opposed by a very strong force deployed over a wide front. This perception reinforces his desire to maintain a defensive posture and often will cause him to spread his forces to counter the expected attack. The thinning of his forces should create situations that the smaller force can exploit with aggressive offensive actions.[8]

A smaller force also can attempt to confuse the enemy by attacking along a route that contains a number of potential objectives. The enemy will not know which of the possible targets that he should defend. This places him on the "horns of a dilemma." He cannot concentrate sufficient forces to defend one of the potential objectives properly without leaving the others vulnerable. If he attempts to disperse his force in order to provide some measure of defense for all targets, none will be adequately defended.

This is a desirable situation. All attack plans should include alternatives. This not only places the enemy in a dilemma, but it also builds flexibility into the offense. If the defender has created strong defenses to protect the intended target, the attack can be quickly switched to an alternate that is vulnerable. This increases the probability of a successful attack.

The successful commander does not react habitually to changing battlefield situations. Neither does he selectively use certain advantages and ignore others. More often, he is like a man possessed as every possible edge is searched out and exploited during his anticipation and creation of favorable situations. No stone is left unturned.

To this point, the indirect approach has been explained in terms of army maneuver. It is much more. It also includes psychological operations to degrade the combat effectiveness of the enemy by reducing his morale and mentally "setting him up" for the attack. Civic actions are used to enlist the assistance of the local population. Deception operations are used whenever possible, and, of course, the US Air Force plays a major role in each of the maneuvers described.

Conclusion

The US Army is primarily oriented for battle against a technologically advanced enemy using conventional tactics. Should the future battle be against this type of opponent, it will be the focal point where advanced scientific achievements and the skills, courage and endurance of the soldier are fused in a dynamic interaction. It will consist of violent clashes by mobile forces armed with long-range, highly accurate and extremely lethal weapon systems. The battle will be continuous. It will involve both day and night operations—in all types of climatic conditions.

The battle may be of short duration. Indeed, the first battle could be the last, and it must be won—even if the opponent has numerically superior forces. It must be won by offensive actions. The defense may blunt the enemy's sword, but it will not decisively defeat him. This is the task of offensive operations. Yet a smaller force cannot afford to indiscriminately use the offense. The margin of error is small, and the blood and courage of soldiers must not become the price of victory. Other means have to be used.

These are to be found in the indirect

approach. This is a historically proven method. It enables a smaller force to engage and decisively defeat a larger opponent without suffering unacceptable costs. It is ideally suited for imaginative and bold commanders. The US Army would do well to adopt the approach as the cornerstone of its tactics. It should be the foundation of tactical thought and deeply engrained in each officer.

This article has outlined some of the ways that the indirect approach can be used by the US Army during offensive operations. It has merely scratched the tip of an iceberg. It is hoped that the reader's curiosity has been sufficiently aroused to seek an expanded and deeper understanding of the subject. If this is so, there are several sources recommended as a starting point.[9]

MR

NOTES

1 Major Robert F Helms II The Offense *Military Review* February 1978 pp 56-66

2 Field Manual (FM) 100-5 *Operations* Department of the Army Washington D C July 1976 Chapter 2 discusses lethality of the modern battlefield in a very clear and convincing manner

3 *Ibid* Chapter 5 describes these

4 *Ibid* Chapter 3 p 3-5

5 George S Patton Jr *War as I Knew It* The Riverside Press Cambridge Boston Mass 1947 p 348

6 These are developed and discussed in FM 100-15 *Corps Operations* Department of the Army Washington D C Chapter 5 which is scheduled for publication in 1978

7 Erwin Rommel *The Rommel Papers* Edited by B H Liddell Hart Harcourt Brace & Co N Y 1953 p 225

8 How this can be accomplished is the subject of Helms *op cit*

9 Among the more useful are B H Liddell Hart *Strategy* Praeger Publications N Y 1967 This book is often considered the cornerstone for present day applications of the indirect approach Although theoretical in nature it uses longitudinal analyses to substantiate the author's conclusions A real world application of Liddell Hart's writings can be found in a study of Field Marshal Rommel's battle planning One of the best is Rommel *op cit* Patton *op cit* also provides the reader with real world application of the indirect approach- particularly Chapter 1 of Part Three Reflections and Suggestions

Freedoms Foundation Awards. The Freedoms Foundation at Valley Forge is now accepting entries in its annual letter awards program. The theme selected for this year is "Why Am I in the Uniform of My Country?" The program is open to all members of the Armed Forces of the United States, to include the Reserve, National Guard and Reserve Officers' Training Corps. Entries in the contest need not be a letter as such, but may be in essay or poetry form and should be limited to not more than 500 words.

The deadline for submission is 1 October 1978. Mail all entries to: Freedoms Foundation, Valley Forge, PA 19481.

Northern Great Plains History Conference. The session in military history is being continued at the conference which will be held this year in Fargo, N.D. Dates for the conference will be 26 October through 28 October. North Dakota State University has issued a *call for papers* on military history, with no restrictions on topics.

For further information on the conference, please get in contact with Professor Archer Jones, Department of History, North Dakota State University, Fargo, N.D. 58102.

Military Policy and Conventional Capabilities of an Emerging Power

William Perry

The rapid socioeconomic development of Brazil over the past 10 years has enabled that nation to upgrade its conventional security capabilities without impacting adversely on the civil sector. Its modernized military arm, although sizable and powerful by Latin American standards, is relatively weak when compared to regional powers in other parts of the world. As an emerging military and economic power in the region, Brazil is in the process of transformation and is rethinking its role both in the Western Hemisphere and as an international actor. The special US-Brazil relationship is undergoing change. Although Brazil will remain a close friend of the United States, the client-sponsor relationship with the US is a thing of the past. As Brazil becomes more self-reliant, the relationship must become one of moral equals. Brazil's armed forces provide flexibility in military policy, add to national stability, assist in economic development and are increasingly capable of implementing their country's military policy as an emerging regional power.

Introduction

UP TO NOW, the bulk of academic attention devoted to the Brazilian military has been addressed to its domestic political role. In the past, some concern has been evidenced in the internal security policies of the Brazilian armed forces More recently, considerable interest has been generated with regard to the military potential of the Brazilian nuclear program. The substance and implications of Brazil's conventional military policies, however, have been almost completely ignored

In Brazil, the term "security" is generally employed broadly to embrace not only matters which North Americans would consider in the realm of national defense, but also questions of public order, political matters—and even the wider course of national development. It is not the intention of this article to treat either the domestic politico-security role of the Brazilian armed forces or their involvement in the process of national development [1] Neither is it the author's aim to approach the military implications of the the Brazilian nuclear program nor provide a comprehensive summary of Brazil's international security relations. Rather, it is the more limited goal of this article to trace the policies of recent Brazilian governments toward the development of the nation's conventional military capabilities and briefly adduce the implications of trends in this area for the evolution of Brazil's international relationships. Thus, for purposes of this article, terms like "military" and "security" are employed in the sense of conventional notions of national defense.

For the past half-century, Brazilian policymakers have considered their conventional security interests as best served by.

- The maintenance of broad parity with the modest military capabilities of the nation's more substantial neighbors (most particularly Argentina).
- Unswerving allegiance to the regional and broader international security policies of the United States.

In the South American security context, Brazil appeared as an awkward giant. Although its bulk alone provided rough equality with the other principal states of the continent, the qualitative deficiencies of its military establishment (closely related to the relative debility of its social and economic institutions) prevented the nation from aspiring to more than parity with Argentina in the Platina Basin or projecting much in the way of influence to other portions of the continent

On the world stage, Brazilian security capabilities were negligible To bolster its continental position, however, and as a guarantee against abuse by extracontinental powers, Brazil allied itself closely to the United States For a variety of reasons, this relationship was unusually intimate and went considerably beyond the nominal involvement of most Latin American states in the security arrangements attendant to membership in the "Inter-American system."[2]

Brazil seconded US declarations of belligerency in both world wars, and a significant Brazilian contingent served (after refitting from US stores) in the Italian theater during the latter conflict. Brazilian governments also were generally amenable to Washington-backed security initiatives on other occasions, providing the Western contingent for several UN peacekeeping activities and collaborating closely with the United States in the Dominican intervention of

1965 The two governments were also linked by a number of security-related arrangements, unusual even in the context of US security relations with Latin America,[3] and Brazil was, in general, a favored recipient of American military assistance.[4]

The course of recent events, however, has gone far to modify this traditional situation In general terms, the rapid pace of Brazilian development has provided the nation with markedly enhanced military potentialities while the steady evolution of the international environment has altered considerably the dominant Brazilian view of how its increasing capabilities ought to be employed. Brazil now disports the economic and social base to contemplate a significant and autonomous military capacity Meanwhile, there has occurred on the South American continent a considerable upset of traditional power relationships and a proliferation of potent military technology which may presage a renaissance of power politics among the principal regional actors.

In the wider world, the drift of international politics is toward a system in which strict historical or ideological alignments are no longer perceived to be of critical importance.[5] In addition, the steady emergence of Brazil as an important international actor predictably has been accompanied by a proliferation of differences with its North American patron. In combination, these trends have substantially undercut the basis for the traditional security policies of Brazil.

Brazilian security thinking (particularly as represented by the intellectual output of the highly influential *Escola Superior de Guerra (ESG)* is both sophisticated and highly sensitive to evolving circumstances.[6] Thus, the impact of recent domestic and international trends has been quickly reflected in the policies of the agencies responsible for the maintenance of national security. There is no master plan (at least in the public domain) for this process, and, clearly, particular policy departures are often precipitated by unforeseen events. Nonetheless, general outlines of the evolving strategy are discernible from the writings and pronouncements of responsible officials and, more importantly, from the increasingly clear trends emerging in the nation's security policy.

Basically, the security policy of contemporary Brazil is geared toward the remedy of certain qualitative defects which have precluded Brazil from exercising conventional military capabilities "competitive" with other important nations and the steady enhancement of the nation's autonomy in military affairs. It should be recognized that pursuit of these goals is severely constrained by the prudent respect of the nation's lead-

William Perry is assistant director, Center of Brazilian Studies, School of Advanced International Studies, The Johns Hopkins University, Washington, D C He received a B A from the University of Vermont and an M.A from the University of Pennsylvania He is a visiting fellow, Foreign Policy Research Institute, and co-author of Brazil, the United States and the Southern Cone

ership for the resource requirements of socioeconomic development.

In the official view, a solid foundation of security is required to promote Brazil's development effectively. But, ultimately, a substantial enhancement of the nation's level of socioeconomic development is required to guarantee Brazil's long-term security interests. Despite this constraint, considerable advances in the nation's conventional security capabilities can be seen through examination of patterns emerging in the critical areas of command and composition, deployment, expenditure and procurement, as well as by changes in Brazil's traditional international security relationships.

Command and Composition

Under the president, cabinet-level ministers of the army, navy and air force (normally the senior officers of their respective service) and an embryonic Joint Chiefs of Staff continue to head the Brazilian military establishment. As yet there is little in the way of functional integration between the services, and each remains quite independent and jealous of its own prerogatives.

Reflecting its governmental role, the army is the predominant power but respects the spheres of competence of the other two services, as well as their relatively modest positions in the nation's political system. The efficacy of military decisionmaking, and perhaps the stability of the government as well, rests upon the continuation of this working relationship among the three services. And, in practice, this makes fundamental alteration of the existing organizational structure extremely unlikely.

Nevertheless, there are numerous areas of military policy on which the three services can easily agree. Since 1964, for example, there has been a steady trend toward centralization of responsibility for security matters in the hands of the national military. The traditionally potent state militias have been limited, police forces expanded, while the efficiency of both and their attachment, through the army ministry, to central government has been increased.[7]

Attempts to centralize and reform lines of authority within the national military have been approached with more circumspection. Nevertheless, there have been notable attempts to rationalize procedures, root out traditional forms of inefficiency and improve the technical and administrative performance of personnel. From time to time, there has even been discussion of consolidation of all security functions under a ministry of defense.

During the years since 1964, the absolute size of the national military establishment has increased gradually but steadily. Brazil currently maintains approximately 257,200 men under arms. Army strength is authorized at 170,000 men while naval personnel (including the naval infantry) stand at 45,800 and the air force numbers 41,400. The Brazilian forces thus significantly outnumber those of any other South American state and are equivalent to those of any two (Table 1). Moreover, the Brazilian armed forces have recourse to a manpower pool which is greater than that of all other South American states combined.

Thus, the quantitative military superiority of Brazil within the regional environment is achieved with a very low rate of manpower mobilization in comparison to its neighbors.[8] Population projections indicate that this advantage will be maintained and even increased

somewhat over the course of the next decade

The Brazilian armed forces, however, have long enjoyed such numerical advantage within the regional environment.

These factors, in combination with the relatively attractive nature of military service in recent years, mean that the Brazilian armed forces now have little, if any, incentive to take illiterates or other

Armed Forces of the Major South American States, 1976*

	Total Forces	Army	Navy	Air Force
Brazil	257,200	170,000	45,800	41,400
Argentina	132,800	83,500	32,300	17,000
Chile	79,600	45,000	23,800	10,800
Peru	63,000	46,000	8,000	9,000
Colombia	54,300	40,000	8,000	6,300
Venezuela	42,000	28,000	8,000	6,000

*Figures from *The Military Balance, 1976 1977* The International Institute for Strategic Studies, London, Eng., 1976

Table 1

The problem, historically, has been that the low level of the nation's social development (most particularly poor health and educational standards) and an insufficient ratio of military expenditure per military man (implying deficiencies in training and equipment) have compromised the quality of the Brazilian armed forces In recent years, however, the illiteracy rate in Brazil has fallen steadily, and, although there remains a substantial underdeveloped stratum in the society, the pool of relatively high-quality manpower has expanded in corresponding measure This group is already far larger than the nation's nominal selective service system can begin to accommodate.

socially disadvantaged elements [9] In addition, the slow numerical growth of the armed forces in comparison to rapidly rising expenditures and the training programs attendant to the acquisition of more technologically advanced hardware imply substantial improvement of manpower quality

Deployment

Operational control of the Brazilian land forces is exercised by four numbered armies with headquarters located respectively in Rio de Janeiro, São Paulo, Porto Alegre and Recife. There also are

subordinate commands for the Amazon and the Federal District Naval and air forces are organized on a similar, but not analogous, regional basis.

Historically, the overwhelming bulk of the Brazilian armed forces have been concentrated around the principal population centers and adjacent to the militarily significant southern frontier. The outlying areas of northern and western Brazil, in contrast, have remained quite sparsely garrisoned. Although this pattern basically still persists, there is clearly in evidence a growing attention to the vast Brazilian interior.

For the present, the goals appear to be only the effective occupation of territory and the provision of social services in remote areas rather than military functions as such. Exact figures are difficult to come by, but the military presence in these areas has increased substantially in recent years.[10] Given the immense dimensions of the area, the garrisons are still relatively sparse, but their mobility is being enhanced by the progress of the road-building program and an augmented aerial network.

This sharpened emphasis on northern and western Brazil has been reflected in administrative readjustments. For example, the Amazon naval command was moved in the late 1960s from Belém, on the Atlantic coast, to Manaus, in the heart of Amazonas.

These army initiatives are being paralleled by the Brazilian naval and air forces. The navy, bolstered by the acquisition of modern vessels especially designed for the task, is rapidly establishing a more substantial presence throughout the nation's extensive riparian network. Likewise, the air force is constructing numerous new airfields to assist in the maintenance of transportation and communications networks in these remote areas. The two lesser services have taken on important new patrol and surveillance duties in connection with Brazilian claims to a 200-mile territorial sea.[11] The Brazilian armed forces are being relocated in more advanced and strategically located bases such as the new complex at Santa Maria in Rio Grande do Sul.[12] The scientifically oriented missile base at Barreira do Inferno is also a scene of heightened military activity—undoubtedly a harbinger of future trends.[13]

Expenditures

Improving the quality of the armed forces and expanding the scope of its operations necessitate the steady and substantial application of financial resources. And, in this area, the thrust of governmental policy is quite clear. During the dozen years following the revolution, the military budget more than quadrupled—rising (in constant dollars) from under $.5 billion in 1963 to more than $2.2 billion in 1975.[14] This figure is particularly significant in the regional context since it is roughly equivalent to the military spending of all the other substantial powers of South America combined. (Argentina, Chile, Colombia, Peru and Venezuela together expended $2.3 billion in the same year.)

On the other hand, trends in Brazilian defense spending should not be thought of as a particularly precipitous or economically debilitating diversion of resources to military purposes. As a percentage of the gross national product, Brazilian military spending (at 1.44 percent for 1963) was the lowest of any significant South American state—a continent which, in turn, has historically spent very little on defense by world

standards. This percentage rose rapidly in the immediate wake of the revolution (to 2.61 percent in 1964) but declined thereafter and has remained relatively steady during the 1970s at a level broadly comparable to other important Latin American states (Table 2).

Clearly then, the bulk of the burden is being borne by the extraordinarily rapid growth of the Brazilian economy since 1968. The percentage of national resources devoted to the defense establishment has not increased appreciably. But the developmental process that has already made Brazil a significant economic power in the world will soon transform it into a military power as well.

It should be noted, however, that, in both relative and absolute terms, Brazilian military expenditures do not yet approach the levels supported by such states as Iran, India or Saudi Arabia—much less the primary or secondary military powers in the international system. Moreover, these expenditures tend to conceal certain types of social services such as mapping, road construction, transport, navigational aid and communication—particularly in the more remote areas of the country.

Although Brazilian military spending has been increasing steadily, the division of these resources among the armed services remained relatively constant until recently. Figures for 1973 noted 51 percent of the federal military budget was expended on the army while the air force and the navy received 25 and 24 percent respectively.[15] These percentages seem to have held steady since the 1950s and probably reflect an understanding of sorts among the services. The recent pattern of expensive hardware acquisitions by the more technological services (that is, the air force and the navy) has unsettled this pattern somewhat in more recent years. But this is probably only a temporary phenomenon which will be evened out as replacement of hardware for the land forces gets underway in earnest.

In other ways, however, there have

Latin American Military Expenditures as a Percentage of the Gross National Product, 1963, 1975*

	Argentina	Brazil	Chile	Peru	Colombia	Venezuela
1963	2 30	1 44	2 33	2 84	1 61	1 92
1975	2 23	2 21	4 32	4.80	1 22	2 08

*World Military Expenditures and Arms Transfers 1966 1975 1963-1973, US Arms Control and Disarmament Agency, Washington D C

Table 2

been marked shifts in the destination of Brazilian defense allocations. Traditionally, Brazilian spending has been largely devoted to personnel expenses (salary, pensions, and so forth). In the past several years, however, much more attention has been given the modernization of all three services through growing capital expenditures. From 1950 to 1969, personnel expenses consumed 83.5 percent of the armed forces budget. During that same period, 5 5 percent of the budget was allocated to "capital investment" and 11 percent to "other costs" (including maintenance and training).[16]

The initial rise in military spending after the 1964 Revolution can be attributed principally to salary increases. During the Quadros-Goulart era, rampant inflation, as well as more rapid pay hikes in other sectors, severely eroded the military's real wages. The years between 1964 and 1967, therefore, constituted a period of budgetary readjustment in which military salaries could be restored to a satisfactory plateau. Even now, however, the loss of promising young officers attracted by high salaries of Brazilian industry poses something of a problem. Since the late 1960s, greater attention has been paid to the modernization of the armed forces and weapons acquisition. By 1971, personnel expenses were scheduled to be reduced to 61 percent of the budget allowing capital expenditures and other costs to rise to 21 percent and 18 percent respectively.[17]

Until the mid-1960s, the equipment in use by the Brazilian military (as in the case of all other Latin American armed forces—save those of Cuba) was antiquated and most rudimentary. Land, air and sea forces possessed only limited amounts of materiel and weaponry—almost invariably surplus US equipment of World War II or Korean War vintage. Clearly, full remedy of the traditional deficiencies of the Brazilian military establishment would require particular attention to the question of hardware.

Since that time, and most particularly since 1968, concrete measures congruent with such concern have been in steadily increasing evidence. A growing percentage of markedly augmented military expenditures has been allocated to "capital equipment"—the vast bulk of these sums to the acquisition of more modern and technologically sophisticated military hardware. This tendency has not been restricted to Brazil and, in fact, is inextricably related to a general regional trend, particularly among the more substantial states of Latin America. In addition, this trend has been accompanied by a marked shift in the source of supply for Latin America's military hardware.

Basically, the United States enjoyed a near monopoly in the supply of military equipment to Latin America during the immediate postwar period. For a combination of altruistic and more self-interested reasons, Washington generally employed this position to limit the war-making capacity of the regional actors and balance their capabilities vis-à-vis potential antagonists.

By the late 1960s, however, this policy was coming into increasing conflict with the growing capabilities and aspirations of the principal Latin American nations. Efforts to secure technologically sophisticated weaponry from the United States were almost invariably rebuffed, and, in fact, strict and onerous new conditions were placed on the transfer of arms to the Latin American nations. As a result, the states of the region simply turned to extrahemispheric sources of supply to upgrade their arsenals.[18] In addition, those states with the

technical and economic capacity to do so (including Brazil) have gone far toward the establishment of a domestic arms industry to satisfy their needs. This latter course has the additional advantages of upgrading local technological capacity, providing domestic employment, defraying import costs and bolstering national pride and independence

Having the same experience as other Latin American states, and more capacity to overcome the obstacles, Brazil has taken a strong position in forging a more diversified and self-sufficient procurement policy [19] And, over the course of the past decade, the air, sea and land forces of the nation have been almost completely re-equipped with a modest but respectable number of modern weapons systems

In the air, the American monopoly was broken (and Brazil's first modern jet fighter-bombers acquired) with the delivery of 16 *Mirage* aircraft during 1972 and 1973 Modern air defense and traffic control equipment also was later acquired from France Subsequent American reconsideration of its position on the supply of jet aircraft to Latin American nations allowed Brazil to obtain 48 modern Northrop *F5E Tiger II* fighters.[20] Together, the *Mirage* and *F5* aircraft provide Brazil with a reasonable number of relatively sophisticated front-line aircraft

Brazilian procurement policy also has been very active below the level of front-line air defense systems And it is in this area the most impressive strides have been made in the nationalization of aircraft production. Founded in 1969, the national aircraft company (Empresa Brasileira de Aeronáutica SA or EMBRAER) has made truly spectacular progress over the course of the past seven years.[21] Beginning with the fabrication of five small agricultural aircraft in 1971, EMBRAER rapidly diversified its product line, to include 10 different designs for agricultural, transport, passenger and military use, and expanded production to more than 500 planes in 1976.

From the purely military standpoint, the most significant of these is the *Bandeirante*, which has been adapted (from its original commercial purpose) to military and patrol activities, and the *EMB326 GB Xavante*, which serves as a trainer and ground support aircraft. Built under a licensing agreement with Aeronautica Macchi of Italy, the *Xavante* has been a particularly successful example of simultaneous expansion of nationalization of military aeronautical capabilities. More than 100 of these aircraft have been produced during the past several years, allowing for replacement of an old line of US-built aircraft previously employed for such purposes.

Plans for the expansion of aircraft production facilities in both civilian and military areas are equally ambitious The beginning of spare parts production for the *F5* aircraft indicates the intention to upgrade as well as expand EMBRAER activities. In addition, the recent sales of EMBRAER products to foreign governments (Uruguay, Chile, Libya and Togo) may presage the emergence of Brazil as a significant exporter.

At sea, the Brazilian navy is moving rapidly to supplement a fleet which previously was composed almost exclusively of World War II surplus units obtained from the United States Plans recently approved reaffirm a 10-year development program aimed at the acquisition of a relatively small, but highly sophisticated, fleet tailored to Brazil's particular defense needs.[22] As in other areas of procurement, there is in evidence a strong propensity to nationalize and di-

versify sources of supply to the greatest extent possible.

Brazil is presently in the process of acquiring six new frigates (*Vosper* class) and three new submarines (*Oberon* class) from Great Britain. These frigates, in turn, are being equipped with modern surface-to-surface, surface-to-air and antisubmarine missile systems from France, the United Kingdom and Australia respectively. Plans recently announced also indicate that these missile frigates soon will be furnished with British advanced-design *WG13 Lynx* helicopters. In addition, six minesweepers of German construction (*Schütze* class) were added to the Brazilian fleet.

Advances in the scope and sophistication of local construction are integral elements of the Brazilian naval program. And this process, in turn, is inextricably related to an across-the-board improvement of ship-building capacity (which is presently aimed at doubling the existing 5 million gross tons of the national merchant marine)

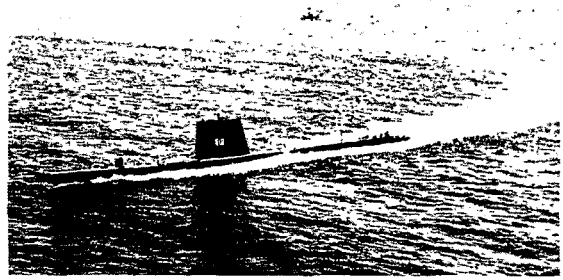
Bandeirante

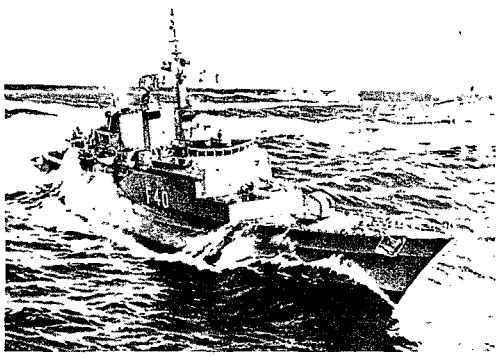
EMB326 GB Xavante

In the military sphere, a set of six coastal patrol craft of the *Piratini* class were constructed locally during the past several years, as well as five craft designed expressly for riparian operations in the Amazon Support craft such as light ships, tugs, landing boats and training vessels are now within the capacity of local industry In addition, steady improvement in the technological sophistication of Brazilian naval architecture may be expected as the *Vosper* purchase agreements with the United Kingdom mandate the construction of several of these sophisticated missile frigates in Brazilian yards. As in other areas, Brazilian naval craft are beginning to demonstrate a foreign market as indicated by the recent Chilean purchase of *Piratini* patrol craft.

On land, somewhat less need has

Guppy class

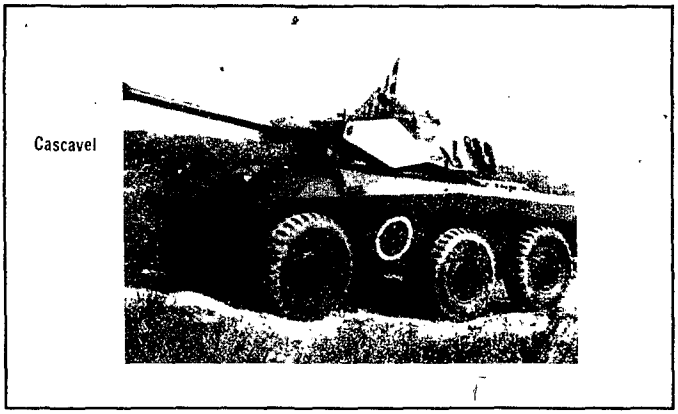




Niterói class

been perceived by Brazilian authorities for the prompt acquisition of high-technology hardware. And, for the present, the backbone of Brazilian land forces remains antiquated (but well-maintained) tanks and artillery acquired from the United States during the mid-1960s. Nevertheless, important advances have been made in procurement of materiels for the army, including, most notably, the German *Cobra* and Franco-German *Roland* missile systems. The lower technological requirements in this area imply that national self-sufficiency may be a more readily attainable goal.

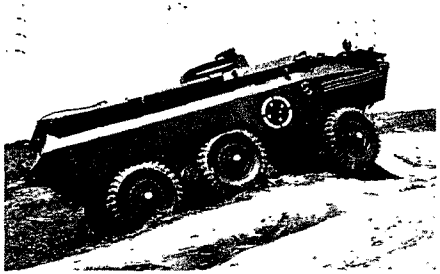
The Brazilian technical-industrial plant is sufficiently advanced to produce ample quantities of such support materiel as wheeled vehicles, electronic communications gear and construction equipment. In addition, the recently consolidated state armaments industry (Indústria de Material Bélico SA or IMBEL) is capable of producing, on its own or



Cascavel

through licensing agreements, most of the national requirements for small arms and ammunition, machineguns and light artillery.

Modern tanks, heavy artillery and sophisticated rocketry are presently beyond the capacity of Brazilian industry. This situation, however, is obviously in the process of transition. Successful local production of several types of armored cars for both land and amphibious operations (notably the *Urutu* and the *Cascavel*) provides strong indication of rapidly increasing technical capacity. The advanced design and specialized capabilities of these vehicles have excited con-



Urutu

siderable interest abroad and give clear indication of considerable export potential.[23]

In addition, there has been considerable discussion of European firms setting up Brazilian operations in partnership with the national armaments industry. Such a development would allow for the production of front-line weapons systems in Brazil, including advanced rocketry, antiaircraft defense systems and modern battle tanks. (In the latter regard, the powerful *Leopard* design from West Germany is most frequently mentioned.) Almost all speculation along these lines is accompanied by assertion that such production would be undertaken for export as well as to satisfy domestic requirements.[24]

International Security Relations

Changes in Brazilian conventional security policy have been in evidence not only in the accelerated development of the nation's military capabilities, but also in an evolving relationship between those capabilities and the international environment. In the past, Brazil generally played a deferential role to the United States in hemispheric and wider international security affairs. Regionally, Brazil's security posture was relatively inert, aimed only at the maintenance of broad parity in capacity and influence with its more significant neighbors (particularly Argentina). The rapid growth of Brazilian capabilities, however, in combination with other evolving domestic and international circumstances, has wrought a remarkable alteration in these traditional relationships.[25]

The demise of the United States as the principal supplier of Brazil's military equipment has already been mentioned. In addition, the turn of recent events has led to the termination of Washington's diminishing, and, of late, rather insignificant, program of military assistance and to the cancellation of other longstanding agreements linking Brazilian security strategy with that of the United States. The origins of this abrupt departure from tradition lie in the tension inherent between Brazil's increasingly credible aspirations to "great power status" and the deferential aspects of its historically pro-American policies.

These events were precipitated, however, by the increasingly frequent clashes between the two governments (over human rights and nuclear proliferation questions) evident during the first months of the Carter administration. The submission by the State Department of human rights assessments in connection with congressional consideration of the security assistance appropriation was viewed by the Brazilian government as intolerable interference in the nation's domestic affairs.

Thus, the Military Assistance Agreement between the two nations was denounced (according to terms contained therein) by the Brazilian government in March 1977. Subsequently, in September, several attendant arrangements were also canceled. The official Brazilian notes on the subject went out of their way to stress that these steps have been taken without malice and that close security cooperation between the two governments is expected to continue on both a bilateral and a multilateral basis.[26] Nevertheless, notice has been served that security relations between the two nations are now on a fundamentally different basis and that any future cooperation would have to be grounded on the mutual interest of moral equals.

The Brazilian security posture within Latin America has changed considerably, but the result is far more ambiguous. Basically, Brazil has emerged as the indisputably premier regional actor but has yet to unveil any comprehensive new design for relations with its neighbors.

Alarmist charges in some quarters regarding Brazilian "imperialism" are quite unjustified if this epithet is intended to imply a centrally orchestrated plan of concerted aggression. Brazil's conventional security policy in no way contemplates the timely acquisition of military capabilities necessary for the conduct of such a policy. On the contrary, substantial mobilization of military capabilities would be seen by Brazilian policymakers as an unjustifiable diversion of resources from the all-important process of socioeconomic development—and, in any event, counterproductive from a security standpoint since it would undoubtedly stimulate a countervailing pattern of arms acquisitions among neighboring states

On the other hand, the very trajectory of Brazilian development relative to its neighbors inevitably implies growing influence among those states and escalating involvement in their affairs. The more or less natural growth of Brazil's military capabilities is in the process of elevating the nation from simple peer status in the regional security balance to a position of conventional military preponderance commensurate with its geopolitical potential.

At the same time, increasing Brazilian involvement in the affairs of its regional neighbors and the latent resistance of former peers to the emergence of a regional paramount lend increased salience to local security questions. If not "imperialist," Brazil certainly can be seen as an organically dynamic nation in the process of institutionalizing a regional primacy in security as well as in economic and political terms.

In recent years, the impact of this trend has been most obvious in the affairs of the Platina Basin. In this area, Brazil has been rapidly consolidating a position of predominant influence among the lesser states along its southern border. The spread of Brazilian influence in Paraguay, Uruguay and Bolivia is manifest through a growing Brazilian role in the trade and domestic economies of these nations and by a generally close political understanding with their conservative military governments Ties also are increasingly close in the security sphere where patterns of military cooperation, sales and aid are beginning to make their appearance.

At the same time, these developments have placed serious strain upon the traditionally suspicious Argentine-Brazilian relationship. Although its current weakness encourages Buenos Aires to assume a conciliatory posture, a brief glance at the Argentine publications on security affairs betrays a deep-seated trepidation over the current trajectory of events.[27] Moreover, the recent controversy over the Itaipu and Corpus dams demonstrates that, even in its enfeebled state, Argentina cannot be pushed beyond a certain point without eliciting a strong reaction.

This case is only illustrative of the new regional security situation in which Brazil now finds itself. As a dynamic state, it will inevitably find itself increasingly involved in the affairs of its neighbors. And, as an emerging regional paramount, it will almost certainly be resisted by its former peers. Such a situation possesses considerable volatility and must be accurately appreciated and judiciously managed by national

policymakers if serious complication of Brazil's regional security position is to be avoided.

The growth of Brazilian military capabilities is in the process of providing the nation with an emerging position in the wider international security balance. Already, Brazilian conventional military capabilities allow the nation to contemplate a more active role in adjacent seas and continents (notably the South Atlantic, Africa and Antarctica). In the future, the gradual but progressive realization of Brazil's military potential undoubtedly will provide the nation with a growing role at the highest level of international security affairs.

Although possessed of strong biases, Brazilian attitudes toward these matters are at present only in an embryonic form. The severance of tutelary ties with the United States and the forging of security-related relationships with certain of the European states indicate the resolution to play a more positive and autonomous world role. But the eventual content of Brazil's international security policy will be strongly conditioned both by the process of the nation's domestic evolution and its experience as an emerging power in the frequently harsh international environment.

NOTES

1 These tasks have been undertaken by a number of competent observers, most notably by Alfred Stepan. *The Military in Politics Changing Patterns in Brazil*. Princeton University Press. Princeton, N. J. 1974.

2 The evolution of this special relationship is treated by Bradford Burns. *The Unwritten Alliance. Rio Branco and Brazilian American Relations*. Columbia University Press. N. Y. 1966.

3 Among these singular linkages were the Joint US-Brazilian Military Commission, a large US naval mission in Rio de Janeiro and close American involvement in the establishment of Brazil's national war college.

4 Between 1946 and 1968 Brazil received more than $1.2 billion in loans and grants, roughly 31 percent of the total US military assistance to Latin America. This figure was two and one half times the amount dispatched to the next largest recipient and more than 10 times the assistance rendered to Brazil's principal security concern, Argentina. See *U.S. Overseas Loans and Grants*, Agency for International Development, Washington, D.C., May 1974.

5 On these general issues, see William Perry. *A Evolução do Papel Internacional da América Latina*. Dados, Number 15, 1977.

6 The *Escola Superior de Guerra (ESG)* is well treated in Stepan, *op. cit.*, as well as by Ronald M. Schneider, *The Political System of Brazil*, Columbia University Press, N.Y. 1972, and Wayne Selcher, The National Security Doctrine and Policies of the Brazilian Government. *Parameters*, Volume VII, Number 1, 1977, pp. 10-24. The *ESG*'s own publication, *Segurança e Desenvolvimento*, is also a particularly good and obviously authoritative source of information on these matters.

7 Stepan, *op. cit.*, p. 18.

8 The percentage of the Brazilian population under arms stands at 20 percent in comparison with .68 percent for Argentina. General Carlos de Meira Mattos, *A Geopolítica e as Projeções do Poder*, Livraria José Olympio Editora, Rio de Janeiro, Braz., 1977, p. 100.

9 Stepan, *op. cit.*, pp. 15-17.

10 For example, the increasing scope of activities in these areas by the armed forces is described in an army pamphlet, *Sentinels of the Amazon*, Brazilian Army Public Relations Center, n.d.

11 On this point, see Michael Morris, "Trends in U.S.-Brazilian Maritime Relations," *Inter-American Economic Affairs*, Winter 1973, pp. 3-24. In addition, new areas of responsibility are constantly emerging as indicated by a recent article on the design of defense plans for the nation's new off-shore oil wells. See *O Globo*, 5 September 1977, p. 5.

12 See Michael Arkus, "Brazil's Spectacular Space Age Launch Site," *The Christian Science Monitor*, 3 July 1975, p. 10.

13 "Brazil Good Fences Make Good Neighbors," *Latin America*, 22 October 1971.

14 *World Military Expenditures and Arms Transfers, 1966-1975, 1963-1973*. US Arms Control and Disarmament Agency, Washington, D.C.

15 *Boletim Federal*, February 1973, Brazilian Military Budget, 1973, p. 134, *passim*.

16 Antonio Carlos da Silva Muricy, "*O Exército como Instrumento da Ação Política Nacional*," *Segurança e Desenvolvimento*, Number 143, 1971, pp. 69-70.

17 *Ibid.*

18 The classic study of this phenomenon is Luigi Einaudi, Hans Heymann, Jr., David Ronfeldt and Cesar Sereseres, *Arms Transfers to Latin America: Toward a Policy of Mutual Respect*. The Rand Corporation, Santa Monica, Calif., 1973.

19 See Larry Rohter, "Brazil Stepping Up Arms Output," *The Washington Post*, 18 December 1977.

20 See "U.S. Confirms Sale of 34 Jets to Chile," *The New York Times*, 8 October 1974.

21 Empresa Brasileira de Aeronáutica SA proudly provides impressive documentation of its progress (in English). See its bulletin, "General Information: Brazilian Aeronáutical Industry," 1977.

22 Details were recently reported in the *Jornal do Brasil*, 21 July 1977, p. 15.

23 "Off the Beaten Track," *Defense and Foreign Affairs Digest*, January 1975. Several orders have already been received and deliveries actually made to Libya. See Larry Rohter, "Brazil Sells Armored Cars to Libya, War Planes to Chile," *The Washington Post*, 19 December 1977.

24 See *La Opinión* of Buenos Aires, 4 January 1977, p. 4 (reporting on an earlier story in the Brazilian newspaper *Última Hora*) and *O Globo*, 29 August 1977, p. 5.

25 On Brazilian foreign policy in general, see William Perry, "Contemporary Brazilian Foreign Policy: The International Strategy of an Emerging Power," *Foreign Policy Papers*, Volume 2, Number 6, Sage Publications, Beverly Hills, Calif., 1976.

26 The items canceled included the special military commissions referred to in footnote 3, as well as a cartographic agreement and the arrangements governing the use of material under the now defunct military assistance agreement. The text of the Brazilian Foreign Ministry's note appears in *O Estado de São Paulo*, 20 September 1977, p. 21.

27 Examine, for example, virtually any issue of *Estratégia*.

Retention for Reserve Survival

Colonel Daniel Gans, US Army Reserve, Retired

Reserve component strength has declined significantly since the end of the draft in 1973. Since it is unlikely that massive infusion of funds for an all-out recruiting program is forthcoming, more emphasis on the recruit retention program is a must. Low morale and lack of meaningful training are the two most often cited reasons for low retention in the Reserves. Reserve unit reorganizations and consolidations are another pressing problem. With retention, morale and esprit so intertwined with leadership, our efforts must be concentrated on the grass roots level—the company. With the soldier mentally and physically fit and MOS and weapons-qualified, he will derive job satisfaction that accompanies dynamic training. This soldier is the best possible recruiter among his peers as a result.

SINCE the termination of draft calls in January 1973, the paid strength of the Army Reserve components—the Army National Guard and Army Reserve—has fallen from 94 percent of the objective strength (660,000) to 84 percent as of August 1977. With strength 108,000 short of the objective and recruit retention ranging from 15 to 20 percent, increased recruiting will have to be funded and stepped up to 120,000 per year to come up to strength within five years.[1] If not, and that is most likely, recruit retention will have to be improved significantly. This is the only cost-effective approach.

To have a viable Reserve mission, we cannot depend on our dwindling Individual Ready Reserve or our mothballed Selective Service System to fill our ranks on mobilization. Rather, it is the responsibility of the Congress, together with the Reserve unit commander, to improve retention and unit strength to the point that selected combat service support units can be deployed immediately following mobilization, and that selected combat and combat support units can be ready for

deployment by M+30 days.[2]

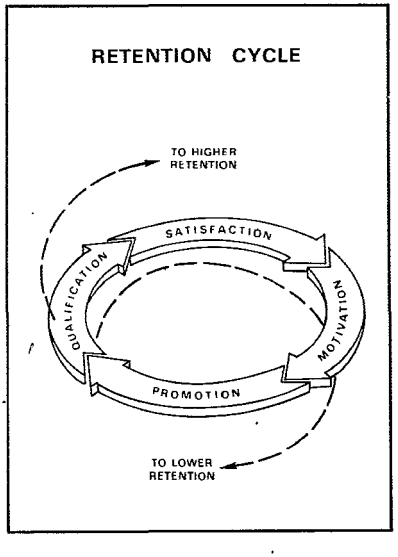
The Reserve Component Readiness Improvement Package (RCRIP), if fully funded by Congress, will go a long way to provide the unit commander with the support he needs by giving him more qualified full-time recruiters and career counselors, offering enlistment and re-enlistment bonuses and by establishing educational and financial assistance programs. In addition, since it is recognized that the key to retention is to provide job satisfaction through realistic, purposeful training, RCRIP authorizes additional Army Reserve Technicians (ARTs) to handle duties that are performed at the expense of training; officer training assistants at battalion headquarters; and, most important, a training/readiness noncommissioned officer (NCO) with each company.[3]

These are key building blocks to a retention program that works, but the keystone and magic glue that make the program work are still the company commander and his team of officers and NCOs. They make the retention cycle work (see accompanying figure). It is their spirit, hard work and attention to detail that pay off—these are the retention aspects this article addresses.

As I have been away from troop duty since 1970, there was a reticence to tread among company command problems again. However, I recently reread a 1968 report to the commanding general, 187th Separate Infantry Brigade (US Army Reserve), which reported on the results of some 80 interviews with men who had completed their military obligation and were about to be mustered out.[4] The report's recommendations were based on the criticisms obtained. Believing these criticisms were outdated, a review by several active reservists revealed that all of them are still valid—the report's findings had been ignored. This gave me the initiative to proceed with what we perceived the problems to be. The reader can be the judge if they pertain to his unit. This is what the report established:

Morale Aspects[5]

• The morale of the enlisted reservist is almost directly proportional to the effectiveness of the training program. The single, most-mentioned complaint was that training is inadequate, unimaginative and poorly presented. Its pervasive effects destroy



efforts to develop interest in the program, individual responsibility and the unit's esprit de corps.

- Many of the better educated men believed their talents were being wasted, that no attempt had been made to correlate their military and civilian education with their job in the unit. Some suggested they were treated like children.
- The men with two years of active duty all commented unfavorably on Reserve military courtesy and discipline; rank means very little, and everybody is "buddy-buddy" and "cliquey."
- Poorly prepared food was attributed to the lack of qualified cooks and food management supervision.
- Failure to clothe and equip enlistees properly soon after assignment was disillusioning and reflected poorly on Reserve efficiency.
- Advancement to NCO ranks depends more on whom you know rather than what you know; a merit rating system is needed.

Training Aspects[6]

- Too much "sit around and wait."
- Poor organization, planning and instruction.
- Unqualified and uninspired NCOs and junior officers ruined training.
- Improper military occupational specialty (MOS) screening and careless job assignments impaired training efficiency.
- MUTA-4s (weekend training) were much preferred to single weekly drills because of a better chance to accomplish a mission. All men regarded the single drill at night a complete waste of time.
- Almost to a man, they were pleased with annual training (AT) (summer camp) wherein the brigade moved directly into the field, stayed there and engaged in a brigade-size exercise in a combat environment even though unit tactics did not exceed platoon level. The men worked hard and believed they had accomplished far more than before. The training received had a tremendous uplifting influence on morale. Moreover, the overwhelming consensus was that the primary objectives of military training are more quickly and efficiently achieved living in the field rather than commuting from the cantonment area.

In the following discussion, I have treated the two areas I consider vital: morale and training and how they lead to improved retention. Although treated separately, they are, of course, inseparable.

Most corrective actions are self-evident from the criticisms received. This critique focuses on those actions not readily identified.

First priority must be given to equipping and uniforming initially every new soldier complete with unit crests and shoulder patch; assigning him to a mutually acceptable position vacancy after an in-depth interview; briefing him on the unit history—preferably with a colorful and informative brochure; introducing him to his new leaders; and establishing a tentative date for basic combat training with his choice of MOSs for advanced training. Command followup will assure that these actions are taken responsively. Simple techniques which make the soldier believe he is part of a team include:

• Adding his name to a current manning chart or vehicle manning chart that is displayed prominently.

• Forming squads/teams in identified ranks with an assigned file for each member by MOS.

• During inspections, asking each soldier two or three questions pertaining to his assignment, weapon, Soldiers' Manual, and so forth. Pride and self-confidence are essential ingredients of physical and military qualifications.

Set high standards for:

• Military appearance and behavior. Start with fit of the uniform; spit and polish only when appropriate; and executing simple formations for inspection or roll call with snap and precision like a drill team. Carry the precision into battle drill.

• Many re-enlistments have been lost on the single account of "haircuts." The unit should set a reasonable standard for appearance and then stick to it. Be objective and weigh the options; remember the Egyptian general who said of his captors, "They looked exactly like a band of robbers."[7]

• Care of individual and crew-served weapons and operator-assigned equipment. Use by assigned serial number only; knowing it's "your own" develops a better appreciation of value and concern.

• Qualification with individual and crew-served weapons. This single aspect has a powerful effect on job satisfaction. Post individual/team/unit scores on known distance and field ranges to increase competition.

• Make the Skill Qualification Tests and Soldiers' Manuals work to qualify the soldier in his MOS. Support this activity with close, personalized attention by immediate superiors—don't give it lip service. This is an ideal opportunity for the private first class to help an E1, a corporal or sergeant to help a team member—all leading to mutual respect and job satisfaction. Concentrate effort on the slow ones so everyone has the feeling that he can carry his share of the load.

• Make the soldier feel that he is mentally and physically fit for combat. He must believe he is the equal to any Soviet soldier—and know the Soviets are not 10 feet tall.

Core Issue

The core issue of self or job satisfaction is good training. Simple things like training schedules should be firmed up early and distributed to everyone so that business and personal arrangements can be planned with assurance. Limit schedule changes to real emergencies. Have the cooks prepare every meal—catering service isn't available in the foxholes.

Much has been said and will be said about "dynamic" training. We need more inspiring trainers to "lift training out of the dull, repetitive routine of the official manuals and to make it varied, competitive, and exciting."[8] Dynamic training leads to job satisfaction, doing an important job and doing it well. However, this is probably the weakest link in the retention cycle. Most of our instructors at the company level don't have the time to prepare good training or lack the imagination or enthusiasm to do so. This subject requires command emphasis throughout the chain of command, and pampering troops isn't a way to do it.

For some combat support and

combat service support units, "doing an important job" may be an occasional local civic help program using unit MOS skills and equipment. Improving individual and unit self-image not only improves retention, but recruiting as well. During a recent Reserve reorganization, it was strong community support for a local combat engineer battalion that finally convinced the Department of the Army not to relocate the battalion. Remember, "People don't quit the Guard and Reserve because they're overworked; they quit because they're bored."[9]

Improving troop receptiveness for training is related, in part, to rest and personal hygiene. With company and battalion exercises continuous, as in a combat environment, training must become more intense and tough if the Reserve is to achieve higher readiness objectives.[10] Because of less than optimum physical conditioning, full use must be made of compensatory time during annual training to prepare the troops for the next exercise phase. This is not to be taken as a weakness in command. The Israelis are acutely sensitive to the physical limits of their reserve army. The Sinai Campaign offers many examples of commanders pausing in the crisis of action to rest their troops.[11]

Several techniques have effectively refreshed troops mentally and physically:

- Provide field showers during administrative periods and warm shaving water every morning.
- Provide laundry service for fatigues and underwear; just letting a soldier clean up revitalizes him.
- Don't forget the amenities of the PX truck during meal times on some rotating basis during administrative periods and Class X rations during tactical phases.
- Terminate the first training week with the completion of preventive maintenance on Friday afternoon. Move back into the field Sunday afternoon if troops were dismissed from the cantonment area. The extra late morning sleep makes it a preferred schedule, and training can start first thing Monday morning. With tents and most equipment left under guard in the field over the weekend, time can be better spent preparing for the next day's training rather than organizing another bivouac—we never had problems getting volunteer guards either.

These considerations, together with well-prepared and timely meals and water that isn't overchlorinated, make the little guy in the rear rank believe that, in fact, someone cares!

Other simple techniques for improving individual involvement in training are:

- Briefing everyone on the daily training highlights, its objectives and what is expected of them. Reveille formation may be the only time the company commander can get everyone together. This means the battalion commander must keep his commanders up to date.
- Conducting two-sided, minimum control exercises to develop challenge and excitement.
- Scoring activities to enhance individual/unit pride and competition. Just counting holes and pasting silhouette targets add interest and develop confidence.
- Having annual awards for the best soldier, squad, platoon and company with a suitable pennant for leaders to fly from their radio antenna.

I know of a "Squadron Best Trooper" saber that is still being handed down and coveted after nearly 20 years. Everyone loves recognition for a job well-done—especially if it is given at an appropriate formation.

Personal Recognition

Personal recognition for superior performance of duty is a catalyst for job satisfaction and motivation. Few enlisted men get awards. Too many dedicated career enlisted men have retired and even more REP 63s (Reserve Enlistment Program of 1963) have left with no recognition for services rendered. Good, existing personnel policies have been abrogated by default because of the paperwork involved.[12] We should award the Army Reserve Components Achievement Medal and the Armed Forces Reserve Medal on an automatic basis from the US Army Reserve Components Personnel and Administration Center through the company commander, subject only to his veto. In the interim, he has to follow up, write letters of commendation when a medal is not authorized, then read them at formation and post them on the bulletin board.

One of the secrets of Field Marshal Montgomery's extraordinary hold over the British soldier was that they knew he would never throw their lives away in some ludicrous, ill-planned and shoddily executed military operation.[13] The training analogy to this combat situation is that troop respect for and confidence in command authority must be earned by better planning and more realistic training. Time wasted, lack of understandable training goals or objectives, chaos due to mismanagement and lack of attention to details affecting the well-being and minimal creature comforts of the soldier all undermine the confidence in leadership required for success in combat.

Field Marshal Rommel believed that, unless the soldier continually receives fresh justification for his confidence, it is soon lost; he must go into combat with his mind at ease and with no doubts about the command under which he is to fight.[14] If selected Reserve units are to be deployed or ready for deployment by M+30, this trust must be achieved prior to mobilization and will be evident from the retention rate.

We previously alluded to our training problems stemming from the lack of effective, enthusiastic and loyal leadership from many of the officers and NCOs in direct contact with the young soldiers we want to retain. NCO academies (shortened versions of the basic NCO course) and junior officer schools are mandatory, and, despite the obvious administrative, financial and logistical problems involved, we must train them ourselves. We shouldn't kick that responsibility upstairs. Not only is unit esprit enhanced, but the two-way contact between the soldier and the major unit commander and the school staff ensures that morale problems are understood and resolved. Most graduates returning to their units provide the seed of mutual respect and trust of the command which can be nurtured to grow among their peers in the ranks.

With financial support, we have conducted NCO academies during inactive duty training, and the results were encouraging for the two years we

were financed. Distinctive badges and promotion to E4 or acting NCO on graduation provided enthusiasm while the command found it an ideal way for implementing the "Blue Ribbon" candidate concept.

It is easy to talk about the noncommissioned officer while we overlook the many ways we have conspired to abrogate his lawful responsibilities and detracted from the respect due him. This subject is well-presented in an article by Captain Halloran, "The NCO: Is He an Endangered Species?," and should be required reading for every leader. If we are going to make promotion and an Army career enticing to the privates, we have to let the NCOs do their jobs, by themselves, and give them the respect and privileges that go with the job.[15] We have to make noncommissioned service enviable, one worth working and re-enlisting for.

Personal Interest

Poor "retention" reflects the morale of the unit. The attributes of a good retention program are intertwined with the principles of leadership and morale-building techniques. The company commander, in particular, must take a close personal interest in the well-being of each of his soldiers. While men must be trained collectively, they must always be treated as individuals.[16]

The big difference between the Reserve prior and just subsequent to the Vietnam War is that, with larger troop strengths, the personal touch was lost and retention suffered since many individuals were treated as statistics or draft evaders. Prior to Vietnam, when strengths were 30 to 40-percent TOE (table of organization and equipment), even with some unpaid training assemblies, retention was good and strength stable. Each company commander knew each of his men well and, in effect, ran his own career guidance and personnel management program.

Current efforts to formalize responsibilities and procedures for a comprehensive retention program, with all their good intentions, have tended to estrange the commander from his men. The commander has to maintain personal contact, even at the expense of talking to them informally during administrative drills—everyone likes to be given an opportunity to talk to the boss. Army Regulation 140-3, *Army Reserve Junior Leader's Councils*, endeavors to provide a formal link between the commander and his men. Even if such councils can adequately represent those leaving the program after one hitch, the arrangement is stiff and impersonal. It may only provide lip service to what is needed—more intimate involvement by the company commander and his support by the battalion commander.

What we need even more than Junior Leader's Councils is an informal enlisted personnel management program to assure that talents are not being wasted and to provide the incentive to advance free from clique influences. There must be early identification of "Blue Ribbon" candidates for promotion so they can be groomed as future leaders as rapidly as possible. Once time-in-grade requirements have been fulfilled, every qualified potential leader must be promoted without delay, even if it is just suspected that he has latent leadership abilities. Full use must be made of promotion re-

quirement waivers, or the candidate made an "acting NCO" on company orders, given stripes and put in charge. Only by giving these young soldiers an early taste of the challenges of leadership can we retain them.

Retention of Commanders

While we are on the subject of company commanders, we should discuss their retention. In the Reserve, their role is even more important than in the Active Army. More than any other commander, they make or break a Reserve unit. While the active commander and his assistants can spend up to 24 hours a day performing their duties, this is impossible for the reservist. Yet the work required, except for training, is almost the same. Furthermore, a Reserve infantry company commander has 150 men, five lieutenants, two ARTs and several million dollars worth of equipment to account for. He gets little support from higher headquarters and must wonder sometimes why he is beating his brains out, especially when he observes some units with more officers than men, mostly field grade, and with little or no equipment to worry about.

Somehow we have to protect, strengthen and stabilize the delicate infrastructure of the typical Reserve company organization that depends so heavily on the strength of its commander. Relief from recruiting activities, more company ARTs, assigned maintenance techniques, training readiness NCOs and less paperwork are surely the ways to go. With the current US Army Training and Doctrine Command Division Restructuring Study considering an increase in the officer ratio to increase effectiveness,[17] the study also should consider making the company commanders majors, as in the British army, in recognition of their importance. For what he does, the company commander is the most overworked, underpaid and least appreciated officer in the Army. We must turn this situation around since the retention program hinges on him more than anyone else.

The foregoing discussion of morale, training and retention does not encompass yet another roadblock to an effective Reserve. This problem is one of our own making, one that every command headquarters through the Department of the Army has had a hand in—frequent Reserve reorganizations. These have had a serious impact by reducing individual qualifications, morale and, subsequently, retention. It has been proven time and again that reorganizations coldly calculated to increase unit strength by consolidation or relocation have proven to be counterproductive—a pet illusion of our Active Army partners.

These reorganizations changed branches and MOSs of the reservists who were the experienced foundation of the Reserve program, some as many as three or four times. This instability discouraged many reservists, and they left the program prematurely. The MOS qualifications of many of the remainder were so seriously affected that the Reserve has never been able to reach, honestly, the 90-percent MOS qualification objective established by the US Army Forces Command. Realistically, it takes 5 to 10 years to branch qualify a Reserve officer, and, during this time, he is only partially effective as an instructor and leader. Reorgani-

zations pose the greatest obstacle to a good retention program. Organizational stability, insofar as practical, is the very backbone of retention.

As an example of well-intentioned plans going awry, one separate brigade was reorganized last year by relocation and consolidation of units to improve objective strength from 55 to 70 percent. For approximately six months, its paper strength increased to 60 percent, but, approximately one year after reorganization, actual strength was lower than before, and many fine soldiers were lost during the shuffle. Again, the Active Army planners did not work through the lowest Reserve commands to use their firsthand knowledge of the units and the people involved. It became more of a map exercise in shifting command post pins around.

If the Army Reserve concept is to survive, we must stop the decline in strength by making significant improvements in retention. Already, the Congress has reduced authorized paid strength by nine percent, from 660,000 to 602,400.[18] With retention, morale and esprit de corps so intertwined with leadership, our efforts must be concentrated at the grass roots level—the company. With the soldier mentally and physically fit and MOS and weapons-qualified, he will derive the job satisfaction that accompanies dynamic training and be the best recruiter among his peers as a result. Motivated by good leadership and example to extend his capabilities and to accept increased responsibility, early promotion leads to improved retention, increased strength and higher Reserve readiness!

NOTES

1 *Manpower for the Military Draft or Volunteer* a special report Association of the United States Army Washington D C Spring 1977 and Achilles Heel? Army Reserve Forces Are Failing Steadily Pentagon Is Worried *The Wall Street Journal* 9 August 1977

2 Colonel Daniel Gans The Israeli Way and U S Reserve Guard Readiness *Army* February 1977

3 *Manpower for the Military—Draft or Volunteer op cit*

4 Lieutenant Colonel Fred H Harrison *Report on Reserve Personnel* 187th Separate Infantry Brigade 10 March 1968

5 *Ibid*

6 *Ibid*

7 Brigadier General S L A Marshall *Sinai Victory* Apollo Editions Inc N Y 1958

8 Alun Chalfont *Montgomery of Alamein* Atheneum Publishers N Y 1976

9 Achilles Heel? Army Reserve Forces Are Failing Steadily Pentagon Is Worried *op cit*

10 Gans *op cit*

11 Marshall *op cit*

12 Command Sergeant Major Anthony J Toto *Existing Award Policies With the Army Reserve* 187th Separate Infantry Brigade 6 April 1976

13 Chalfont *op cit*

14 Erwin Rommel *The Rommel Papers* Edited by B H Liddell Hart Harcourt Brace Jovanovich N Y 1953

15 Captain Joseph E Halloran III The NCO Is He an Endangered Species? *Army* December 1975

16 Rommel *op cit*

17 *The Army Training System Overview* address by General W E DePuy at AFTCOM IV 24 May 1977

18 *Manpower for the Military Draft or Volunteer op cit*

Colonel Daniel Gans, US Army Reserve, Retired, is a consulting nuclear engineer with Stone & Webster Engineering Corporation in Massachusetts. He received a B S from Northwestern University, a B.B.A. and an M.S. from Northeastern University and is a graduate of the USACGSC. He served on active duty in the European theater during World War II His USAR command assignments include duty with the 94th Infantry Division and the 187th Separate Infantry Brigade.

NATO and the Warsaw Pact--An Assessment

Colonel Phil Stevens, US Army, Retired

For many years, military analysts have punched out long lists which invariably showed the United States lagging far behind the Warsaw Pact in numbers of men and war equipment. Only infrequently have the analyses shown anything other than a purely mathematical assessment of the balance. To obtain a truer picture, other factors such as the training levels of the troops, weapons capabilities, availability of reinforcement and lines of communication must also be plugged into the equation. Unfortunately, as Stevens points out, once this is done, NATO still appears to be on the short end. Our best solution is a higher state of readiness—one which will be able to force a rapid stalemate hopefully not escalated by the introduction of nuclear weapons.

SINCE the birth of the Atlantic Alliance, the European balance of power, as represented by the opposing NATO and Warsaw Pact forces, has ebbed and flowed, but the tide has generally favored the pact nations.

In the 1950s, NATO's ground combat power was considered incapable of being more than a "tripwire" that would trigger a full nuclear response against an invader with superior conventional forces. The entry of West Germany into the alliance in 1955 began an upward trend in conventional capability, but, despite the addition of German divisions, the NATO forces have never balanced their Warsaw Pact counterparts.

For some 29 years, military analysts have punched out long adding machine tapes which invariably showed the Warsaw Pact had more men, more divisions, more tanks—more of just about everything that contributes to a purely mathematical assessment of the balances. Only infre-

Excerpted from *The Shrinking World—1977—A Year-End Assessment*, a Special Report by the Association of the United States Army

quently did those analyses take a deep look at the meaning of the numbers.

There are many factors to be considered other than pure numbers. The training level of the troops, the capabilities of individual and crew-served weapons, the availability of reinforcement and the security of lines of communication—all these and more must be plugged into the balance equation. This assessment of our most essential alliance will attempt to add as many of these qualitative judgments as possible.

Ground Combat Forces

A cursory glance at the numbers of major ground combat elements likely to be involved in the early stages of a war in Northern and Central Europe shows a more than 2-to-1 advantage for the Warsaw Pact forces. It is unquestionably true that the 70 divisions on the pact side of the ledger are in varying degrees of readiness, but so are the opposing NATO divisions. Also, the NATO total does not reflect the 10 divisions that France could commit to battle if it chose to participate in what surely would be in its national interest at the ultimate hour of truth.

The same glance indicates that NATO has an appreciable edge in the number of divisions available in the Southern part of the area, but it may miss the fact that those divisions are scattered from Italy through Greece to the Turkish/Soviet border (see Table 1).

Many analyses also ignore the fact that most of the smaller countries in NATO have less-than-division-sized units that can contribute to the ground war. Lumped together on the basis of two brigades plus support troops equaling a division, these forces total about 10 division equivalents. Also ignored in these purely numerical comparisons is the fact that the Soviets and their allies get a much higher ratio of tanks to men in their combat divisions. This is the most obvious reflection of differences in what has been called the "tooth to tail" ratio, but it is more reflective of differences in the philosophy for organization for combat than it is of the efficiency of the units involved. When a US division takes heavy casualties, it usually stays in the line and gets individual replacements. Under the same circumstances, a Soviet division would probably be replaced. Also, most of the support found within a US division is provided to a Soviet division by corps troops. Over the past few years, the combat to support ratio in a US division has moved closer to the Soviet ratio but, barring a complete revision of American tactical doctrine, will probably not get much closer (see Table 2).

The Weaponry Balance

Warsaw Pact superiority in conventional weapons can be attributed to two straightforward factors—they have more of them and, with the Soviet Union as the prime supplier to all pact armies, they have almost total com-

Colonel Phil Stevens, US Army, Retired, is the assistant director, Public Affairs, for the Association of the United States Army.

Ground Forces Available in Peacetime (Division Equivalents)

Northern and Central Europe

	Armored	Infantry, Mechanized and Airborne	Total
NATO	10	17	27
Warsaw Pact	32	38	70
(Of Which USSR)	22	23	45

Southern Europe

	Armored	Infantry, Mechanized and Airborne	Total
NATO	4	33	37
Warsaw Pact	6	27	33
(Of Which USSR)	2	9	11

Table 1

monality. In the early days of NATO, the United States was the common supplier, but, as member nations recovered from the destruction of World War II and were able to rebuild their own arms-making industries, commonality suffered. While some progress has been made to avoid duplication of

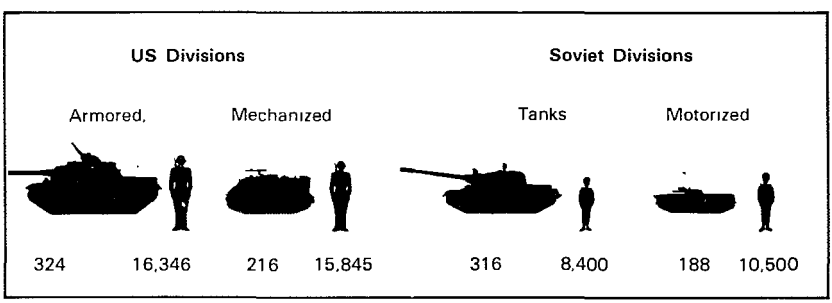


Table 2

effort, the NATO logistics structure would have to bear the load of handling many different kinds of ammunition, spare parts, and so forth.

The NATO forces enjoy a numerical superiority in artillery and rockets in the Southern zone, but more than a third of the NATO weapons are concentrated in Italy and not readily available to reinforce in Greece or Turkey (see Table 3). Generally speaking, the Warsaw Pact artillery is superior in range capability, but the NATO fire support is considered superior in lethality. New types of artillery rounds entering the NATO inventory are extending the range somewhat, and there is even a prom-

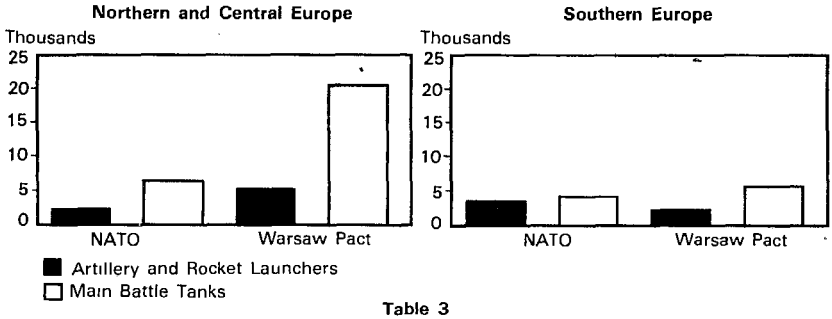


Table 3

ising project which will soon permit firing guided artillery projectiles against moving targets like tanks (the cannon-launched guided projectile, *MR*, June 1976, p 93).

The huge discrepancy in the numbers of tanks available to the potential adversaries cannot be rationalized away entirely by the explanation that the pact forces are organized to take the offensive while NATO envisions a purely defensive action or by wishfully thinking that the wide variety of antitank missiles, both under development and already in the hands of troops, offset the imbalance. The fact remains that nothing else can match the maneuverability and shock action of a tank.

And, in the meantime, the tank gap seems to be growing. Between 1972 and 1976, the Soviet Union produced an average of 2,770 tanks per year while the United States produced an average of 469. Other NATO nations are producing tanks, to be sure, but their output, when combined with US production, does not close or even stabilize the gap.

Most of recent Soviet tank production has been devoted to its latest model, the *T72*. Few NATO tanks can match it, the notable exceptions being the latest model of the US *M60* tank and perhaps the German *Leopard II* which is not yet in production. The US *XM1*, now in advanced development and early preparation for production, is expected to be a superior combat vehicle, but it will be several years before it will be available in significant numbers. In the meantime, the United States will produce 780 new-model *M60s* in Fiscal Year 1978.

Another weaponry advantage to the Warsaw Pact is derived from Soviet doctrine on the use of chemical warfare (CW). Their weapons and countering protective devices are no better than those available to NATO, but the Soviets do not have the hangups about the use of CW that prevails in most Western countries. CW is a standard part of their offensive doctrine—their troops are exposed to concentrated CW training and accept it as a standard part of their arsenal. Western countries, to the contrary, tend to look on CW as "dirty pool"—something they do not even like to think about. While NATO commanders are putting increased emphasis on CW training, it is doubtful that they can ever completely overcome the ingrained rejection of

CW. It may take a heavy dose of casualties to finally bring reality home.

The NATO allies have a clear margin of superiority in the number of tactical nuclear weapons available for use (see Table 4). It is estimated that NATO has about twice as many tactical nuclear weapons on hand as the Warsaw Pact, but neither side has much universality in distribution of the weapons. The Soviet Union controls all of the weapons available to the Warsaw Pact and has shown little inclination to make them available to their allies. On the NATO side, Great Britain and the United States have all the weapons (France, the nonpartic-

TACTICAL NUCLEAR DELIVERY SYSTEMS

	Type	Range (Statute Miles)	Warhead Yield	Number Deployed (As of July 1976)
Soviet Union				
Artillery	*M55* Gun Howitzer (8 in)	18	KT[1]	Unknown
Missiles	*Scud A*	50	KT	300
	Scud B	185	KT	300[2]
	Scaleboard	500	MT	300
	Frog 3 7	10-45	KT	600
Aircraft	*Il 28 (Beagle)*	2 500	4.850 (Payload lbs)	
	Su 7 (Fitter A)	900	4 500	
	Tu 22 (Blinder)	1 400	12,000	
	MIG21 (Fishbed)	1 150	2.000	2 500[2]
	MIG23 (Flogger)	1 800	2.800	
	Su 17 (Fitter C)	1 100	5,000	
	Su 19 (Fencer A)	1 800	8 000	
United States				
Artillery	*M110* Howitzer (8-in)	10	KT	200
	M109 Howitzer (155mm)	10	2 KT	300
	M115 Howitzer (8-in)	10	KT	Unknown
Missiles	*Pershing*	450	KT	18
	Lance	70	KT	36
Aircraft	*F105D*	2,100	16,500 (Payload lbs)	
	F4CJ	2,300	16,500	1 400[3]
	F111A E	3 800	25 000	
	A7D	3 400	15,000	

[1]KT less than 1 megaton
[2]Estimated
[3]Only those deployed in Europe

Table 4

ipant, has some too), and many US weapons would be made available for employment by other national forces once the decision is made to use them. The US development of the enhanced radiation or "neutron" weapons, which will cause casualties among enemy troops without excessive damage to surrounding structures, has received growing support from NATO allies and could add to the nuclear weapons edge.

The maintenance of air superiority is vital to the successful defense of Western Europe. The side whose troops can maneuver freely and resupply themselves readily without unacceptable harassment by enemy aircraft will have a big advantage. At the onset of hostilities, the Warsaw Pact would have the advantage in numbers of tactical fighters and interceptors, but the NATO air fleet is more capable from the standpoint of range, payload and technical sophistication. NATO also has the greater reinforcement capability (primarily from the United States) with an aggregate total of about 5,000 combat aircraft reinforcements (without stripping US air defense or training), compared to an all-out Soviet diversion of assets totaling about 4,000.

In ground-based air defense, the balance swings once again to the Warsaw Pact. Soviet, and therefore Warsaw Pact, doctrine makes a deliberate trade-off of front-line combat troops for forward area air defense units. NATO air defenses do not thicken until in the combat support areas, and, even then, they do not have comparable numbers of weapons. This shortcoming is an item of close attention for US elements in particular. There are many new developments on the way to close the gap and to make air attacks on NATO combat elements more costly to the enemy.

Reinforcements

Obviously, the side that is best able to reinforce itself will have a large advantage in bringing the war to an end on its own terms. Allied intelligence credits the Soviets with a total of 168 divisions, 31 deployed in Central and Eastern Europe satellites and the balance stretched out across the vast expanse of Russia to the Sino-Soviet border. About 66 of these divisions are estimated to meet the Soviet Category I readiness condition—at least 75-percent manning and all equipment. The balance is in Category II—between 50 and 75-percent manning and all equipment, or Category III—about 30-percent manned but probably with all combat vehicles. The general location and condition of these divisions are:

- Eastern Europe—31, all Category I.
- European Russia—64, about 20 Category I.
- Central and Southern Russia—30, all Category II or III.
- Sino-Soviet Border—43, about 20 Category I.

No Red army reserves are organized into units, but former conscripts are obligated to serve until age 50. This pool of trained manpower probably exceeds 25 million.

The United States is the only NATO partner with a major reinforcement capability. There are 10 US Active Army divisions and eight Army National Guard divisions in the Continental United States. Three of the

Active Army divisions are specifically earmarked for immediate or early reinforcement in Europe, and heavy equipment for two of them (one armored and one mechanized) plus that for an armored cavalry regiment is already stockpiled in Germany. Also, the US Marine Corps (three active divisions plus one reserve division) is paying increased attention to the possibility of employment in Europe.

While the total of 18 Army divisions sounds good, there are some very fundamental problems that diminish their reinforcing value. Only two of the earmarked divisions have equipment on the ground in Europe, and that equipment plus expendable supplies such as ammunition still bears the mark of drawdowns to support Israel in the 1973 October War. The National Guard divisions are short of equipment and personnel which would delay their deployment substantially. A scarcity of sealift would delay the arrival of all but the first two divisions.

This is not to say that the other NATO countries are totally lacking in reserve army units. Belgium can muster two infantry brigades. Great Britain has a substantial number of regimental and battalion-sized reserve units. The Federal Republic of Germany is forming six brigade-sized units for home defense, and Norway can field 11 regimental combat teams of about 5,000 men each. In most cases, however, the bulk of the NATO reserves is in the form of pools of former conscriptees.

Supreme Allied Commander General Alexander M. Haig Jr. has been warning for some time about the need to achieve a better balance in the assets available to him for the defense of Western Europe (see Table 5). He says, in essence, that two-thirds of the Triad of deterrents he has available—strategic and tactical nuclear weapons—are in good shape, but the other part—conventional force—is in trouble. General Haig recently told the US Senate Armed Services Committee:

. . . deficiencies in our conventional posture are currently the most grievous. To correct them, we are placing priority on the improvement of the readiness of inplace forces, to guarantee their capacity on short notice to move rapidly to their defensive positions materially and psychologically prepared to fight; on the rationalization of our forward defense, to insure that our multinational, multiservice forces are able to operate effectively in concert; and on the enhancement of our reinforcement capabilities, to insure that the external and rapidly-mobilizable theater forces which underwrite our forward defense are enabled to close rapidly and smoothly with forces already engaged.

But Haig maintains that improvements in the management of existing resources will not be enough.

Nothing our European commanders can do will compensate for insufficient levels of manpower and equipment; for sustaining capabilities inadequate to the demands of today's intense and lethal battlefield; or for the density and availability of reinforcement through which to guard against the high rates of attrition our assessment tells us we can anticipate. For these basic resources we must rely on the vigorous and active support of our member governments.

The United States has, in fact, increased its forces in Europe by almost 18,000 in the past year.

Senator Sam Nunn (Democrat,

	Favors	
	NATO	Warsaw Pact
Divisions Immediately Available		X
Divisions for Reinforcement		X
Active Manpower		X
Reserve Trained Manpower		X
Conventional Firepower		X
Tanks		X
Numbers		X
Quality	Probably About Even	
Attack Aircraft		
Numbers		X
Quality	X	
Available Reinforcement	X	
Air Defense		
Interceptors		
Numbers		X
Quality	X	
Surface-to-Air		
Numbers		X
Quality	Probably About Even	
Nuclear Weapons		
Numbers	X	
Range (Surface-to-Surface)		X
Range (Air-Delivered)	X	
Sea Power		
Surface Combatants	X	
Attack Submarines		X
Antisubmarine Warfare	X	
Logistics		
Lines of Supply		X
Commonality		X
Secure Production Base	X	

Table 5

Georgia), a member of the Armed Services Committee, is so concerned over the conventional imbalance that he believes the Warsaw Pact is being presented with a low-risk option for a successful conventional attack with little or no warning. Following an inspection trip to Europe, Nunn and Senator Dewey Bartlett (Republican, Oklahoma) issued a report highly

critical of the level of readiness they found in US forces there and questioning the longstanding NATO strategy of trading space for time to bring up reinforcements.

"As an alternative for consideration," Nunn asked, "why not force the Pact to wage the main battle along the intra-German border?"

Whether the NATO forces are able to hold at the border or must fall back through the Federal Republic of Germany, they must give a good account of themselves from the very outset, or the availability of reinforcements and resupply is merely academic. Indeed, the answer to the secondary question of whether the war would be long or short also seems to hinge on the way the first few days go—perhaps even the first few hours. If NATO does not at least bring the Warsaw Pact aggressors to a rapid stalemate, the war will indeed be short.

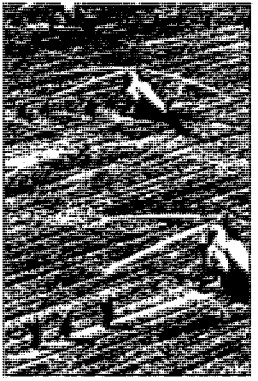
Once the Soviet Union and its allies have committed themselves to the attack, it is most unlikely that they would withdraw in the face of effective resistance. It seems more likely that they would step upward from a purely conventional attack to some level of nuclear warfare in order to regain the initiative. However they react, the involvement of both antagonists will be complete. Nothing short of a commitment to all-out, long-term war will assure victory for either side.

MR

Peru Receives Soviet Missiles. Peru recently received a shipment of *SA3* surface-to-air missiles from the Soviet Union, thus becoming the first Latin American country to deploy this type of system. The *SA3s* furnished Peru are the twin-ramp version mounted on *SIL151* trucks. As part of the system, Peru also received the "flat face" target acquisition radar.—*Strategy & Tactics,* © 1977

And Argentina Won't Get Anymore US Help. Military sales to Argentina have been banned by Congress after this month. The sale of a significant air defense system being discussed earlier with the Argentines also got caught in the ban. The prohibition against US aid, sales, training and financing was included in the International Security Assistance Act of August 1977.—*DMS Intelligence,* © 1978.

Rear Area Security With an "Elastic FEBA"



Lieutenant Colonel Moorad Mooradian, US Army

Within the European context, the Soviets have the capability to land mobile combat troops in the rear of NATO divisions and corps by parachute, helicopter and by sea. US doctrine for rear area security calls for Rear Area Operations Centers to control such matters. However, there are no RAOC units on active duty. Can we honestly expect reaction-type forces composed of combat support and combat service support personnel to counter first-line Soviet combat troops effectively? It will mean more training and more equipment and mission degradation while these reaction forces are off fighting instead of doing their jobs. Perhaps we should designate combat units as the primary reaction forces in RAS. The German army learned a hard lesson in World War II when rear area security against the Russians was not taken seriously. Remember the Soviets now have the technology to insert sizable, mobile combat forces into our rear areas in Europe. With this capability, our rear areas could become another "front" rapidly.

SOPHISTICATED intelligence activity is not necessary to ferret out significant aspects of Soviet military plans. They have practiced strategic and tactical heliborne operations into an enemy rear, their leaders have written about and openly discussed it and the allocation of Soviet resources to increasing their helicopter fleet has substantiated their candor.[1]

Within a European context, it means that the Soviets intend to land mobile combat troops in the rear of divisions and corps. They have the wherewithal to insert their troops by parachute, helicopter and by sea.[2]

Soviets are advocates of airborne operations, and their Eighth Guards Army airborne divisions are a main striking force.[3] However, they consider reinforced motorized rifle battalions (MRBs) ideal for heliborne operations and continue to develop the helicopter capability to support their plans.[4] In

either case, the impact upon rear area security (RAS) plans for divisions and corps is awesome.[5]

As early as 1968, the Soviets showed a preference toward the use of MRBs in airmobile operations. Soviet tacticians are convinced that infantry troops require no more than 10 hours' instruction in airmobile tactics to qualify them for airmobile missions.[6]

A statement made by General V. F. Margelov, chief of the Soviet airborne troops, illustrates succinctly the philosophical underpinning of their airmobile doctrine:

But perhaps the main distinction of the helicopter landing is that personnel who have been trained for just a few hours can be used in it. Thus, marines, combat engineers, mortarmen, the motorized riflemen, that is, representatives of the various arms of troops, can be readily moved to the enemy rear using helicopters and begin active combat operations there.[7]

Though rumors purport that the Soviets are thinking about activating troops specifically geared for airmobile operations, their convictions mitigate against such a move. As a consequence, the helicopters remain in the inventory of the military transportation regiments of the air army. Helicopter units are apportioned to Army *fronts* for the *front* commander to distribute according to his priority. They may be used in a logistics role or the assets may be parceled out to armies or divisions for tactical assault missions.

Flexibility allows the Soviets to preplan heliborne strikes or to devise operations during the course of events. The latter is suited to exploit targets of opportunity.[8]

One should anticipate a Soviet airmobile force to be well-manned and equipped to satisfy the needs of particular missions. Tailored task forces by objective is the keystone behind the 10-hour block of airmobile instruction for all soldiers. A tailor-made striking force can be assembled in quick order.

The logical extension of this doctrine is no surprise. They have assumed world dominance in heavy lift helicopter capability. A unique helicopter in the Soviet fleet is the *Mi-6 Hook*. The *Hook* can accommodate 65 passengers or 33,000 pounds. Capabilities of this craft are harmonious with the Soviet airmobile philosophy.[9]

An MRB is likely to include a 120mm mortar battery, 122mm howitzer battery, combat engineer platoon, antitank guided missile platoon, chemical reconnaissance squad and specialists as required.

As recently as February 1976, the Soviets conducted major field exercises in the Transcaucasus Military District opposite the Turkish/Iranian border.

Lieutenant Colonel Moorad Mooradian is with the Department of Resource Management, USACGSC. He received a B.A. from Rhode Island College, an M.A. in history from the University of Rhode Island and is a graduate of the USACGSC. He has served in Germany as assistant chief of staff, G4, 3d Infantry Division, and in Vietnam as operations officer, 75th Support Battalion, 1st Brigade, 5th Infantry Division (Mechanized). His article "DISCOM in a 'Come as You Are' War" appeared in the June 1978 Military Review.

The exercise was code-named *Kavkaz-76*. In addition to unlimbering the extensive use of helicopter gunships, they laid the groundwork to practice attacks into the enemy rear.

In June, exercises took place opposite the NATO northern region in the Leningrad Military District, code-named *Sever-76*. This exercise included a minimum of two heliborne assault operations. Of special note is the fact that one tailored motorized rifle battalion landed to the rear of the defending forces and the other supported crossing of a river.[10]

Insertion of mobile infantry with armored vehicles and artillery into the rear gives rise to a host of defense problems. Soviet rhetoric speaks for itself:

To accomplish such varied missions podrazdeleniye (a tailored force) are assigned as tactical airmobile forces which possess high firepower and maneuverability; as a rule they displace an armored personnel carrier. Such podrazdeleniye are armed with combat equipment which can be lifted into the enemy rear by air transport and are supplied with material . . . for the conduct of prolonged battle.[11]

US rear area protection (RAP) doctrine is designed to counter enemy interest in the rear areas. It has two parts: RAS and area damage control (ADC). The first is devoted to intervention in the event hostile forces are involved while ADC concentrates on reduction of damage and to minimize its effects. This article is confined to RAS albeit both are interrelated.

Doctrinally, RAS encompasses operations to prevent interruptions to combat support (CS) and combat service support (CSS) operations vis-à-vis enemy forces. Soviet capabilities and the *desant* (landing force) doctrine expose the fallacy of the definition. Indeed, hindrances to CS and CSS could be disastrous, but the Russian ambitions range far beyond stopping support functions.

The Soviets plan to insert combat forces in the flank and/or rear with the purpose of overwhelming the NATO defenders at the forward edge of the battle area (FEBA). Airborne troops, airmobile motorized infantry, naval amphibious troops or a combination of all working with Soviet sympathizers will be active. Indigenous assistance to Warsaw Pact forces should be expected from the onset of hostilities.

Soviet *desant* forces will endeavor to seize river-crossing sites, control key terrain, isolate beachheads in support of amphibious operations, prevent commitment of reserve forces into the main battle, disrupt a retrograde, control key road junctions, destroy nuclear weapons capability, isolate command and control elements, sever logistics routes and strike at targets of opportunity.[12]

Since Warsaw Pact ambitions dwarf threats to CS and CSS activity, the US definition of RAS should mature accordingly. Further, the US Army's traditional correlation of RAS as a one-to-one relationship with CSS has tended to inculcate a philosophy of scorn among combat leaders that any effort to the rear of the "FEBA" is second rate and unworthy of dedicated combat attention.

A general review of the current US Army RAS doctrine as an integral part of RAP may assist in placing the circumstances in perspective. Principles on corps and division are similar though the mechanics vary to some degree.

On the corps level, the commander assigns the corps support command (COSCOM) the responsibility of implementing RAS. Since the COSCOM staff is committed fully to logistics problems, rear area operations centers (RAOCs) are assigned to each support group to control RAS matters.

These centers have approximately 81 personnel and are the focal points for RAP in corps. They are responsive to the COSCOM commander as command centers with the delegated responsibility as well as authority to neutralize an enemy encountered in the corps area. If required, these centers provide the commander to lead reaction groups. In addition to RAS, the center also has purview over ADC.

Major Problems

There are no RAOCs on active duty—nor does US Army, Europe, have support groups. All of these centers have been consigned to Reserve or National Guard. In the event that an aggressor crosses the borders in Europe without prior warning, these centers probably will not be available at the most crucial time during the first days of combat.

Troops to suppress an enemy in the corps area are provided from COSCOM assets as reaction teams. This is in addition to their regularly assigned duties.

Division support command (DISCOM) commanders have the RAP mission within the division support area (DSA). The G3 has RAS outside the DSA, and the G4 handles the ADC responsibility. In the DSA, personnel are provided from within DISCOM for RAP missions, similar to COSCOM.

DISCOM is not authorized an RAOC. The security plans and operations section is theoretically staffed to assume this mission.

In some divisions in Europe, the DISCOM role has expanded beyond the DSA to include RAS for the entire division rear. The lack of depth in combat troops has caused division commanders to go with what is available.

It is judicious to use CSS units as the main RAS force if the primary threat emanated from harassment-type activity. CSS units can and should be prepared to counter such threats, and all should be trained to defend themselves irrespective of the source.

The major difference in the current threat from previous wars is the mobility provided by the helicopter for placing large bodies of combat troops quickly, and with tremendous firepower, behind US lines. It has become increasingly evident that the Soviets will insert combat troops into the vulnerable rear areas concomitantly with initiation of combat.

This dangerous juxtaposition elevates RAS to a primary combat role beyond the reasonable expectations of all but combat forces to counter. It must be done by defenders equally trained and equipped to destroy or neutralize the landing force.

It is important that the RAS force be capable of destroying the inserted enemy forces. In the event that the Soviets launch a no-warning attack, it is likely, at least during the very critical initial stages, that enemy pressure will be extensive across wide frontages. It seems implausible that combat troops will be shifted to the rear for an RAS problem, thereby inviting an enemy armor exploitation of the weakened zone.

The Soviets have launched air-mobile assaults in unison with their tank thrusts. Unless the Soviet MRBs are dealt with in quick fashion, any friendly success in the forward areas could be abrogated from the rear.

Currently, US Army rear areas (corps and division) have no forces capable of neutralizing the Soviet threat—excluding any combat forces held in reserve. In order to develop a viable force from CS or CSS units available that can shoot, move and communicate on a par with the Warsaw Pact MRB, an effort tantamount to the development of a pseudomechanized infantry organization is required. Such an organization must divest itself from its current duties and prepare full time in peace to do battle in combat.

Any effort that is less than wholehearted to prepare for an encounter with an MRB is likely to terminate in disaster. It is extremely precarious, and the stakes are much too high to assign the RAS mission as one of a number of other tasks for which a unit is to prepare. Trained enemy infantry should not be assaulted by part-time infantry troops.

A unique situation exists among units normally categorized as CS and CSS—that is, the presence of female soldiers. CS and CSS units are receiving an increasing number of women noncommissioned officers (NCOs) and enlisted women who have never received even the rudimentary training necessary to lead their personnel against an enemy. Fortunately, a recent Department of the Army decision requires enlisted women to receive the same basic training as enlisted men. Though this does not negate the NCO problem, it provides enlisted women skills commensurate with their male peers.

Women, officer and enlisted, will play a larger role in division and corps support units. Their involvement in attacking an enemy bears close scrutiny.

Assaulting a Russian MRB inserted by helicopter in the rear area is a different proposition from defending oneself. If the MRB attacks a command post, the realities of defense are clear-cut: everyone fights. But does it constitute self-defense if the MRB occupies a strategic road junction on the main supply route and the RAS force is called upon to clear it?

A final decision on what constitutes authorized combat activity for women will have a definite bearing on RAS matters. Unless women are authorized combat roles or, conversely, they are excluded from support units in a combat zone, the strength ratio of male to female may hinder a unit's ability to perform an RAS mission.

There is ample indication that European NATO countries will assume an ever-widening role in a future war, but US units cannot surrender RAS responsibility to host nations. The Federal Republic of Germany Territorial Forces (FRGTF) as an example are organized and equipped and certainly will strive to satisfy their mission. But they have a multitude of responsibilities, and their work load is such that they must prioritize and one or more of the benefits expected by US forces may not materialize. The total peacetime manning of the FRGTF is 60,000. Most of the units are equipment holding at cadre strength requiring time for mobilization to reach combat readiness with an increased strength of 500,000. As a minimum, US forces

should count on a slack period when the tasks assigned to the FRGTF may not be completely fulfilled.[13] Further, the FRGTF do not intend to assume RAS missions normally assigned to field forces.[14]

In the rear areas of the combat zone, the FRGTF secure areas and objects to assist in allied operational freedom of maneuver. However, the mission is not to protect friendly forces or field forces installations.

There is much to gain by studying German army RAS experiences of World War II. The Germans, too, originally mandated that support troops could eliminate Russian-induced RAS problems. It did not take many months of combat for the German army to discover that "at times entire divisions were cut off from their supply base for a short period."[15] At times, German front-line troops were diverted to the rear areas to undertake the danger to their backs:

German experience during the Russian campaign clearly demonstrated that a passive defense based on scattered security strong points is not sufficient, no matter how well such a defense may be organized.[16]

It became evident to the *Wehrmacht* that the Russian effort to the rear supported the activity on the FEBA perfectly. So successful were these efforts that the Germans called it the "front behind the front." The unequivocal conclusion drawn by the German army was that *regular combat forces* should be used in RAS if any degree of success is expected.[17]

There are no easy solutions to the RAS problem. This article has not addressed the situation in the echelons above corps which is included in the Soviet *desant* concept. Yet the situation is not hopeless, but it does require a realignment of traditional thinking.

Foremost, it should be recognized that attacks in or beyond the brigade rear boundary will occur concomitantly with an attack at the FEBA by well-trained Soviet forces and should be evaluated as extensions of the main attack.

Second, the threat to the rear areas must be met by a force as well trained and equipped as any that may be airlifted or parachuted in. Attempts to qualify a CS or CSS unit would require development of skills equal to the attacking force. An inordinate amount of peacetime training would be necessary at the expense of fulfilling the normal mission. This, in essence, is a pseudoinfantry organization. Further, the need for additional arms and for increased mobility to combat an MRB may be a duplication of effort.

Third, the Soviet combat troops probably will be assisted by sympathizers.

Fourth, CSS troops must be better trained and equipped to defend themselves. Self-defense will be their primary RAS responsibilities. Only in extreme cases should CSS troops assume the mission as the sole RAS force.

Last, but perhaps most important, dogmatic opposition to assigning an RAS role to a "traditional FEBA fighter" must change. Heavy lift helicopters, tactical helicopters and the Soviet advocacy of airmobile/airborne operations have stretched the "forward edge" beyond clearly defined limits. It is hardly reasonable to expect Russian tanks to drop in from the sky via helicopters though it is not beyond their capabilities to insert a limited

number if Russian investment in the heavy lift helicopter is extensive enough. However, not only is it reasonable, but one should plan on being confronted with motorized infantry with combat support in the rear areas, particularly in division areas of operations.

The implications are clear. A combat force dedicated to fighting at the "elastic FEBA" is required to neutralize this Soviet potential. This force should be highly mobile, thoroughly trained and equipped to counter combat troops inserted into the rear area. This mission is suited ideally to an airmobile organization or a unit that has rapid reaction capabilities.

Assigning an RAS role to a highly trained combat force is anathema in many quarters. Opponents argue that an airmobile infantry or any combat organization must be on the "front lines." Increased helicopter technology and Soviet enthusiasm associated with it have blurred any clear-cut "front-line" trace, and the danger increases with each year of Russian expansion in helicopter technology.

The late 1980s is likely to present a main battle area that will extend as far as the helicopter resources can carry troops and equipment. Any RAS force will have plenty to challenge the best it has to offer. Study of this proposition could begin with assigning an airmobile division a two-corps responsibility for RAS; V and VII Corps in Europe as an example. An airmobile division has the communication and command and control to tie in to the existing structure.

The potential for taking advantage of an airmobile combat punch to react to a higher priority (armor breakthrough) provides the field commander tremendous flexibility. Any organization already complete with command and control obfuscates the need for RAOCs. The worth of RAOCs in a no-notice war needs study as do ADC responsibilities which are currently entwined with RAS as part of rear area protection.

German leaders in World War II learned quite expensively (lives, equipment and defeat) that halfway measures are inappropriate for rear area defense. They learned their lesson against an enemy that was not as well-equipped, trained or organized as those which NATO troops will encounter in a future war. The Germans concluded:

No longer is it appropriate to treat this zone (rear areas) as a stepchild or to regard it merely as the zone of communications in the traditional sense.

NOTES

1 Major David A Bramlett, Soviet Airmobility An Overview *Military Review* January 1977 pp 14-18

2 C L Donnelly The Soviet Desant Concept *International Defense Review* July 1971 pp 544 46

3 Graham H Turbiville A Soviet View of Heliborne Assault Operations *Military Review* October 1975 pp 3 9

4 John Erickson Soviet Military Capabilities in Europe *Journal of the Royal United Services Institute for Defence Studies* March 1975 and Bramlett *op cit* p 18

5 Though rear area protection (RAP) includes rear area security (RAS) as well as area damage control (ADC) this article will limit itself to the former

6 I S Lyutov and P T Sagaydak *Motostrel Kovyy Batalion v Takticheskan Vozdushenom Desante (The Motorized Rifle Battalion in a Tactical Airborne Landing)* Military Publishing House Moscow USSR 1969 pp 89 91

7 V F Masgelov *Bridgehead From the Clouds* Young Guards Publishing House of the Komsomol Central Committee 1972 p 58 (Joint Publishers Research Service (JPRS) 57507 p 27)

8 Turbiville *op cit* pp 4-8

9 Major Peter M Wargo The Evolution of Soviet Airmobility Impact on the Seventies *Military Review* November 1975 p 8

10 Graham H Turbiville Jr The Attack Helicopter s Growing Role in Russian Combat Doctrine *Army* December 1977 p 30

11 Lyutov and Sagaydak *op cit* p 7

12 Donnelly *op cit* Bramlett *op cit* pp 19 20 and Turbiville A Soviet View of Heliborne Assault Operations *Military Review op cit* p 13

13 US Army CTSC Forward Deployed Force Operations (European Setting) 1977 Section II p L5 II 1

14 *Ibid*

15 Department of the Army Pamphlet 20 240, *Rear Area Security in Russia The Soviet Second Front Behind the German Lines* (Historical Study) 31 July 1951 p 13

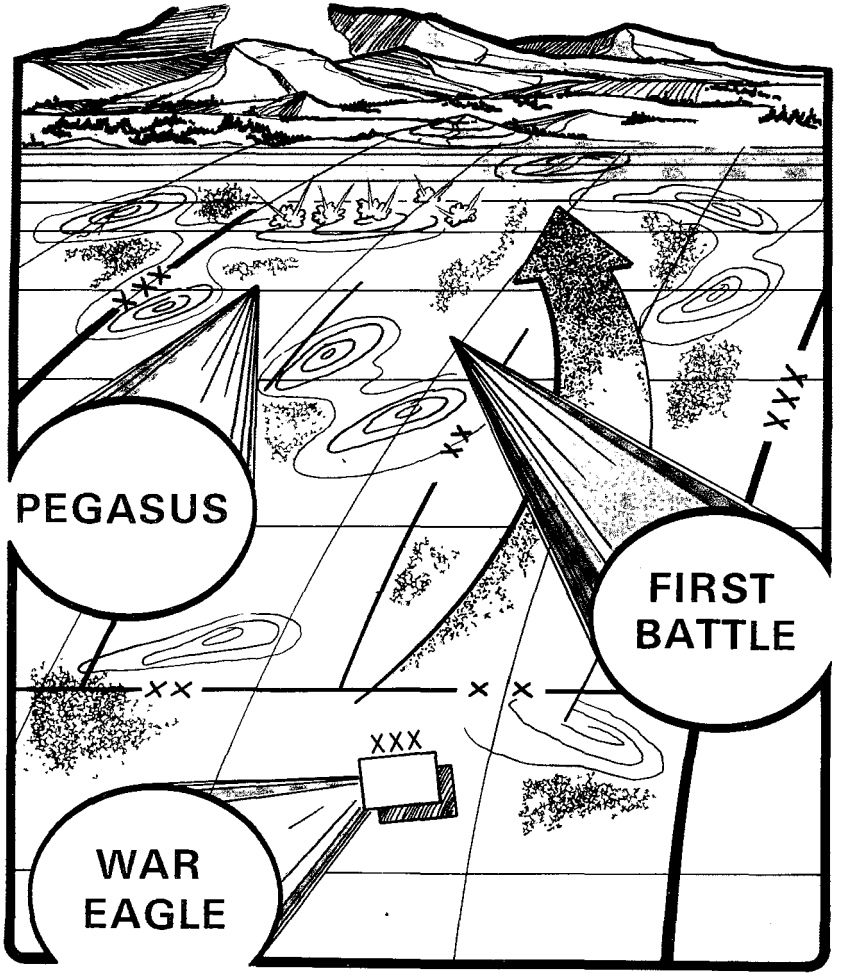
16 *Ibid* p 35

17 *Ibid* p 34

Developing Battle Simulations:

The Road Beyond War Games

Lieutenant Colonel Junius R. Alexander, US Army
and
Major Jesse W. Miller Jr., US Army Reserve



Purpose of Army Battle Simulation Systems

THE Army uses battle simulations as training aids for commanders and staffs, to develop teamwork among commanders and staffs and to evaluate plans and tactical concepts. Staffs use battle simulation systems to generate data for command post exercises (CPXs) and other staff training activities. Commanders may use simulations as a prelude to Army Training and Evaluation Programs (ARTEPs) to observe their staffs functioning in a simulated tactical setting and to highlight any weaknesses that must be corrected in training. Finally, simulations of appropriate complexity and scale may be used to project possible battle outcomes and critical points during the execution of plans and tactics. These assist commanders and staffs to anticipate the strengths and weaknesses of their plans and tactics.

The advantages of battle simulation systems over the "canned message" method of conducting a CPX are flexibility and response to staff actions. If the staff decides to conduct an envelopment and the inflow of canned messages is related to a penetration, the staff must change its plan to the "school solution." The battlefield tactical situation and span of time simulated can be varied easily in current and battle simulation systems under development.

Battle simulations for commander and staff training are developed for the US Army Training and Doctrine Command by the Training Devices and Simulations (TDS) Directorate, CATRADA (US Army Combined Arms Training Developments Activity), Fort Leavenworth, Kansas.

A battle simulation system is dynamic. Commander orders and staff requests influence the situation and, consequently, the input of messages to the staff. There is constant feedback between the simulated battlefield situ-

The Training Devices and Simulations Directorate of the Combined Arms Training Developments Activity at Fort Leavenworth, Kansas, is responsible for developing and fielding all battle simulations systems used for training. These simulations are used as training aids for commanders and staffs, to develop teamwork and to evaluate plans and tactical concepts. Ranging from simple, manually operated battle simulations to very complex computer simulations, these systems are flexible and can help train units from squad or platoon level up to corps level. Although the US Army is just beginning to scratch the surface on the use of battle simulations systems, these systems have proved their worth by providing a more systematic and objective means of "war-gaming" plans and tactics and by assisting commanders and staffs in obtaining realistic data for future use through battle simulation.

ation and command and staff activities. The consequences of staff action (or inaction) are brought out by the simulation.

Plans and tactical concepts are currently "war gamed" either mentally by a commander or in staff discussion groups. Battle simulation systems provide a more systematic and objective means of "war gaming" plans and tactics. Analytical battle simulation systems that are designed primarily to provide a data base within a combat developments sphere (a means to predict equipment types or supply expenditures in a possible future conflict) are not products of the TDS Directorate.

Constraints

Battle simulation design is constrained by the resources available to both the designer and the ultimate user. The user will have limits on the time that can be spent setting up and conducting a battle simulation. A simple, easy to organize and easy to execute simulation system may be more valuable than a more "realistic" system of such complexity that it is rarely used. Manually operated simulation systems require players to move units and conduct engagements. The more complex the system, the more players are required to make the system function. Personnel constraints may limit the range of battle functions that may be simulated.

Computer simulations systems may reduce the number of controllers required but are generally more complex than manual systems. However, the availability of computer facilities may limit the number of staffs that can use these systems. Other constraints include the space required to set up and run a simulation and the communications facilities required for the more complex systems. Staffs of troop units would be most likely to conduct CPXs or other staff training when troops are engaged in individual training. The availability of suitable facilities, such as classrooms and auditoriums, may be most limited at the very times a staff has the opportunity to conduct a battle simulation.

The designer has constraints as to the time available to produce a battle simulation system and the number of trained people available to assist him. There also are limitations on the amount of graphic/printing support available and the lead time required to obtain it. Finally, the availability of "test units" for both the initial and final play-testing of prototype simulation systems may be a constraint.

The Philosophy of Battle Simulation Systems

An unofficial paradigm or way of thinking about simulations has evolved within TDS. The battle simulations developed are invariably stochastic, free play, flexible and user-oriented. The stochastic approach presents a range of possible outcomes to any action. Thus, the outcome of most actions is determined by a "roll of the die" rather than predetermined by force ratios or other variables. Player use of maneuver, terrain, and so forth affects the probability of certain occurrences but rarely rigidly determines them. If the probabilities incorporated

BATTLE SIMULATIONS		
ECHELON	MANUAL SIMULATIONS	COMPUTER-SUPPORTED SIMULATIONS
CORPS	WAR EAGLE	LANCER
DIV	FIRST BATTLE	BROADSWORD
BDE	PEGASUS	CAMMS
BN	PEGASUS	CAMMS CATTS BATTLE
CO	DUNN-KEMPF	
PLT	FIREFIGHT DUNN-KEMPF	

This matrix identifies the battle simulations currently under development at the Combined Arms Center, Fort Leavenworth, Kansas. When production is complete, the commander and training manager will have available a wide variety of training tools.

in the die roll tables are sound, a prolonged period of play should generate a plausible sequence of events and reasonable battle outcomes.

Free play means that the user can utilize his own standing operating procedures, staff and command procedures, and tactics. No single course of action is mandated by the scenarios or game rules; an infinite variety of responses can be made to the simulation results.

Army battle simulation systems vary in flexibility, but there is almost always a wide range of possible scenarios, and the systems usually permit the user to develop situational unique scenarios. In addition, optional rules and modules permit varying levels of complexity in most of the simulations.

Army "war games" are designed to generate simulated battle data for commanders and staffs. The commanders and staff simulate combat operations with their actions and orders. The simulation system models combat. It reacts to the command and staff directives and simulated enemy actions to produce simulated battlefield situations. The command group is placed in a simulated combat environment. The staff, in turn, reacts to the "reports" of these situations with further staff and command actions.

The data provided by the simulation system may be the input for a CPX, ARTEP or familiarization session on unit plans and tactics for newly assigned staff officers. Gamesmanship (unrealistic interpretations of the rules, tactically implausible actions) is discouraged. In low-level (squad through company) simulations, the player/controllers may be the users of the data generated. In higher level simulations, the player/controllers are often separate from the staffs using the simulation results. Instructions for these systems usually emphasize that the simulation is being run for the benefit of the staff, *not* the player/controllers.*

*Technically, the staffs are the players of the combat simulation and the personnel modeling combat by moving unit counters, rolling die, and so forth are player controllers.

Design

After determining the user's requirements and constraints, the system designer must decide upon a method of simulation that best fills the training requirements. The broadest division is between manual and computer simulation. Systems designed for ARTEPs, CPXs and training in small unit tactics are usually manual. Field units generally have enough personnel to man at least the more simplified version of manual simulations but may not have the computers and computer personnel to run computerized simulations. Examples of manual simulations are FIREFIGHT, DUNN-KEMPF, PEGASUS, FIRST BATTLE and WAR EAGLE. The simulation of war plans by higher headquarters or the testing of tactical concepts usually requires complex simulations that are either fully or partially computerized.

Some staff training-type simulations are partially computerized. This combination of manual and computer simulations is appropriate to service schools and higher headquarters where the facilities and computer expertise are available. Examples of computer-assisted simulations are CAMMS (Computer-Assisted Map Maneuver System) and BATTLE (Battalion Analyzer Tactical Trainer for Local Engagements). CATTS (Combined Arms Tactical Training Simulator) is an example of a computer-driven simulation system.

The designer must carefully consider the degree of resolution required to generate useful data. In FIRST BATTLE, the maneuver of Blue (US) company teams and Red (threat) battalions was considered adequate to simulate situations to which a division staff could respond. Although it is possible to resolve engagements at the platoon and squad level, little would be gained in terms of data for a division staff, and considerably more resources would be required to design and conduct the simulations.

As a rule of thumb, the designer should select the lowest level of resolution that will simulate plausible situations and produce useful data for the user. The simpler the game, the fewer resources are required to develop and use it. The purpose of these systems is to simulate plausible battlefield events and generate data for commanders and staffs, not to seem "realistic" to the player/controllers.

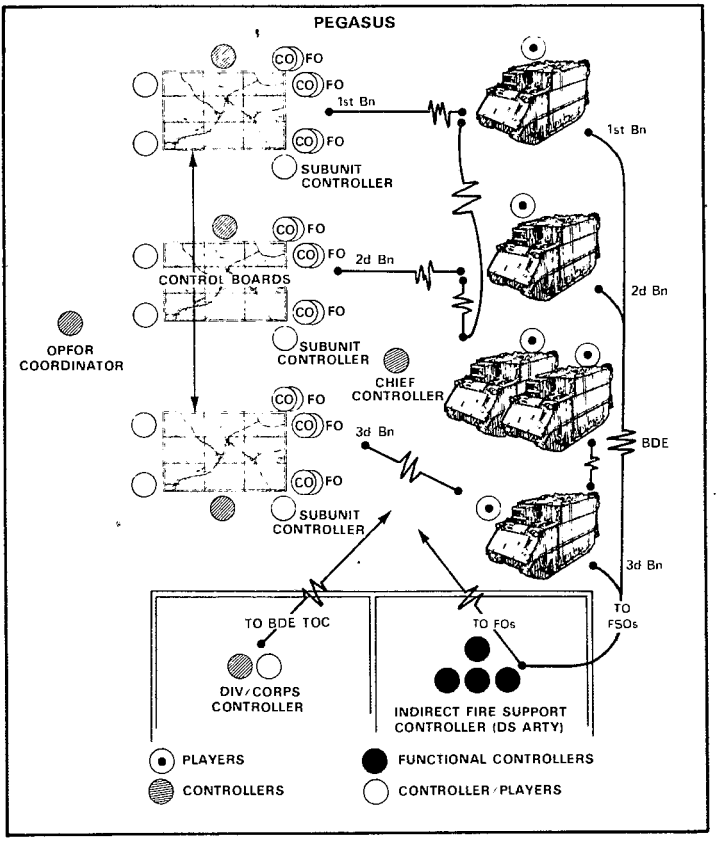
The scale of the simulated battle, in both time and space, must be appropriate to the user. The simulation of a 10-kilometer-square battlefield and six hours of combat may be adequate for training in platoon tactics, but larger areas and longer time intervals would have to be simulated for a division CPX.

If a manual simulation system is adopted, the designer must decide how to represent the battlefield. He may use a three-dimensional terrain board, as in DUNN-KEMPF, topographic maps, as in FIRST BATTLE, or a stylized playing board or map sheet used by most commercial war games.

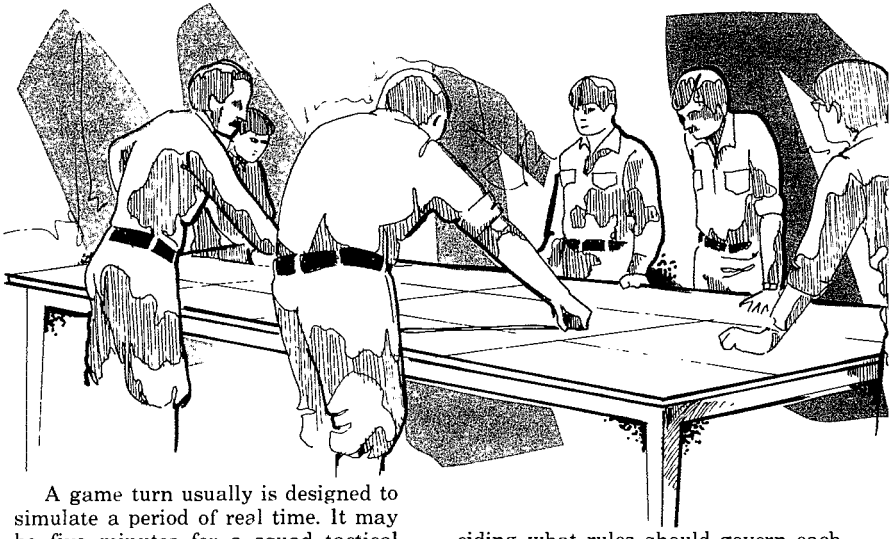
Three-dimensional terrain boards or topographic sheets are appropriate in teaching small unit tactics and command procedures. In these simulations, the person being trained is also the player/controller so that the "realism" provided by a terrain model or map is appropriate. Where the persons being trained are not the player/controllers, as in a division CPX,

realism to the player/controllers is less important, and a stylized map sheet usually will make play simpler and faster. Stylized map sheets, however, take time to design and produce, and player/controllers must be taught how to read them. Topographic sheets usually result in more rule disputes (that is, "Does that road go from square 1 to square 2 without passing through square 3?") and, thus, slower play, but topographic sheets are readily available and understood by player/controllers. An additional advantage of topographic maps is flexibility. The user can change the battlefield simply by using maps of another area.

Developing the procedures by which the simulation is conducted is the most difficult and complex part of the de-



signer's task. Rules of movement and engagement; the use of tables, controllers and umpires; and the sequence of game actions must be painstakingly designed and carefully explained. The simultaneous battlefield events of moving, shooting and taking casualties must be divided into discreet segments in order to be simulated. (At the playing board, this is then converted into tactical language for input to the command group).



A game turn usually is designed to simulate a period of real time. It may be five minutes for a squad tactical game or half an hour for a division-size simulation. These "turns" are segmented into a sequence of actions or "phases" that the players follow. For example, a turn may start with an air strike and indirect fire phase by the Red player, followed by a counter-battery phase by the Blue player, and so forth. The more complex the game, the more phases there are within a game turn.

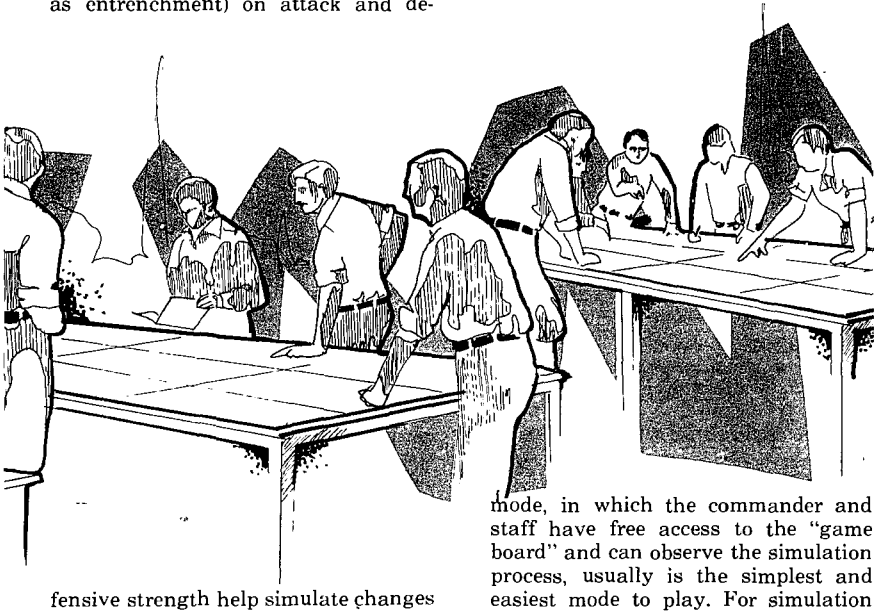
Rules must encompass movement, fire, casualties and as many other events as are required to generate useful situations and data. Rules can best be designed by a flow chart sequencing simulated actions and deciding what rules should govern each action.

Simulated movement usually is controlled by rules allocating to each unit a number of movement factors per turn and rules specifying how many movement factors are "absorbed" by different types of terrain and enemy actions. Combat is governed by rules allocating different fire (or attack)

strengths and ranges to units and assigning defensive strengths to each unit. Outcomes of fire or attack actions are determined from charts by the roll of a die or the selection of random numbers. Rules governing the impact of terrain and various activities (such as entrenchment) on attack and defensive strength help simulate changes in force ratios from these factors.

Well-thought-out rules, adequately explained and illustrated, will minimize confusion and player disputes. However, provision must be made for a controller to settle disputes and make certain that the rules are followed. Rules should be clear enough so that excessive controller interruption does not disrupt the play. Situations requiring a "judgment call" by controllers should be kept to a minimum; experience has shown that controllers in even fairly simple games are very busy. Whenever possible, die roll tables should be developed to replace judgment calls.

Along with the rules, the designer should decide on the modes in which the game can be played. An open



mode, in which the commander and staff have free access to the "game board" and can observe the simulation process, usually is the simplest and easiest mode to play. For simulation systems where the players are the users of the data, such as in DUNNKEMPF and other small-unit tactical games, the open mode will usually be the only mode.

Open mode play for brigade and higher staffs, however, does not simulate the "fog of war" which afflicts staffs that cannot actually see the battlefield. Intelligence activities cannot be simulated realistically under conditions where the staff has access to the playing board. For this reason,

simulations in support of a CPX or ARTEP for brigade or higher staffs usually are conducted in a closed mode. In a closed mode, the commander and staff do *not* have access to the playing board. If the closed mode is used in garrison, a telephone/message connection between the staff and the simulation system will suffice. If a closed mode is used in a field CPX, however, organic command post communications networks must be used to pass reports from the player/controllers to the staff and orders from the staff to the players/controllers.

Simulation systems used in a closed mode also can be used in a multiechelon manner. For example, WAR EAGLE is a simulation system in which a corps headquarters simulates combat operations by directing two or more division staffs. The division staffs, in turn, are using FIRST BATTLE to model division combat. In a similar manner, a division headquarters could direct the operations of and receive reports from two or more brigade staffs using PEGASUS. Although multiechelon simulation systems permit the training of a number of staffs at different levels simultaneously, the mechanics of such simulations can become very complex.

Finally, the designer must decide what to put in the basic simulation and what to put in optional rules or modules for more realistic simulations. Generally, movement, target acquisition and direct and indirect fire are part of the basic simulation. Logistics, intelligence, air support, engineer operations, electronic warfare and chemical and nuclear conditions usually are covered in optional rules or modules which can be "plugged in" to the simulation when desired.

Testing

Once a designer has developed his initial version of the simulation system, he should solicit comment from other agencies and have a crude mockup of the game played by colleagues, students or other available players. All systems must be thoroughly "play-tested" by the design staff prior to field evaluation by tactical units. A fair degree of success must be anticipated before a costly CPX is conducted to test the simulation system.

When the bugs discovered in designer test play have been corrected and the suggestions of other agencies have been incorporated into the game, the simulation is ready for prototype production.

Arrangements should be made during liaison activities for testing of the prototype, preferably by potential users. If possible, the designers should observe the testing so that they can observe the strengths and weaknesses of the simulation. The schools or units actually playing the test version must, of course, comment in detail on the game and be encouraged to make recommendations.

After prototype testing, the developer usually will modify or redesign the system to correct deficiencies. The most important consideration is that the simulation produces situations and data useful to the intended user. The game should be as easy to "play" as possible and the instructions and rules should be clear and unambiguous. The designer may have to simplify the game or make it more complex to meet the above objectives.

After redesign or modification, the

simulation may either be retested or placed into production. The physical components of the game must be durable enough for repeated use and the rules illustrated as well as possible. The designer may have been able to brief players during prototype testing. This will not be possible for widely distributed production models. Examples of game play must be given and illustrated. If the users have video cassette capabilities, a video-taped briefing, including examples of play, should be considered for inclusion in the final simulation "packet."

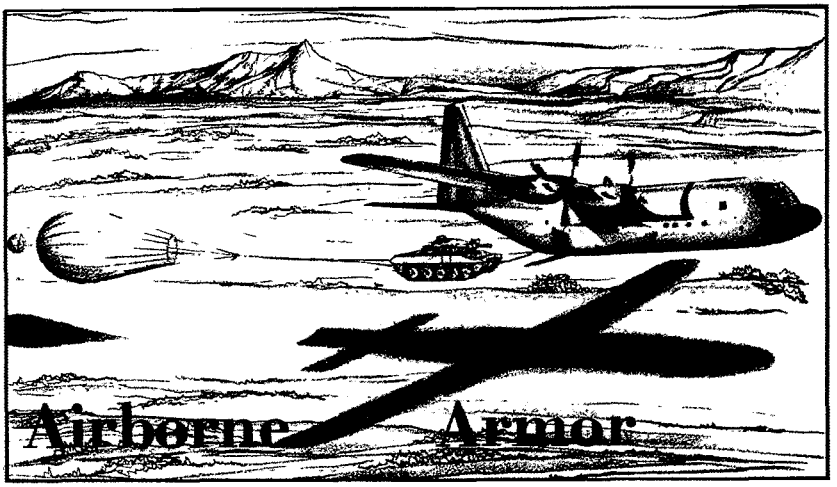
Before the final simulation system is sent to the users, a scheme for maintaining the system must be operative. The designer or his successor must be available to answer questions about rules and procedures, and improvements suggested by users or other designers must have a channel for incorporation into the game. Therefore, complete files on system rationale must be maintained. Changes in doctrine, weapons or tactics may be incorporated into simulations by modification of existing battle simulation systems rather than the development of new systems. Finally, a means of replacing or repairing game components should be set up and the procedure for obtaining replacement components sent to the users. The current family of simulation systems will be maintained by the area training aids support facility.

What is the future? Refinement and improvement of the battle simulation systems discussed here are part of it. Studies are underway that will tie simulation systems into maneuver control for field training exercises (FTXs). This is an ambitious and thought-provoking enterprise, designed to reduce the subjective nature of the current "umpire"-controlled FTX. The battle simulations systems now in use Armywide have opened the door to such ideas.

MR

Lieutenant Colonel Junius R Alexander is a project officer for the WAR EAGLE battle simulations system with the Training Devices and Simulations Directorate, US Army Combined Arms Training Developments Activity, Combined Arms Center, Fort Leavenworth, Kan He received a B.A. from Park College and is a USACGSC graduate. He has commanded an airborne company in Okinawa, served in Vietnam with both US and Vietnamese forces, and was an instructor with the Department of Tactics, USACGSC

Major Jesse W Miller Jr., US Army Reserve, is an auditor for the New York State Department of Audit and Control. He received an M S. from the University of Wisconsin, an M.S. and Ph.D from Syracuse University, and is a USACGSC graduate In 1965-66, he served as a terrain analyst in Vietnam with the 529th Military Intelligence Battalion. His mobilization designee assignment is with the Office of the Assistant Chief of Staff for Intelligence, Washington, D.C., and he is a member of the Consulting Faculty, USACGSC.



Lieutenant Colonel Albert S. Britt, US Army

IMAGINE a 60-ton *C130* thundering through the air on an evasive, low-level flight plan. Inside, there is no way to relax—especially once the loadmasters open the doors. This is no routine training exercise. Today's airborne operation is a test of a new concept in war—the drop of an armor force miles behind enemy lines.

The aircraft is carrying troops of the 2d Platoon, A Company, 4th Battalion, 68th Armor, and a few personnel from the battalion command group. Three minutes ahead, five other *C130s* should have already finished delivering their *M551 Sheridans* to the drop zone (DZ). Now, we can feel the aircraft rise abruptly to 1,000 feet and begin its sudden slowdown. The jumpmaster leans back inside, after stretching out the door to check the DZ. "Stand in the door!" he commands. The rest of us lean forward as the aircraft makes a final corrective lurch before settling into the exact course predicted by the navigator to place the *Sheridan* crews over their machines. There is no more spectacular way to go to war!

The armor battalion of an airborne division has a number of crucial roles that it may assume in defense of an airhead. The roles of covering force or outpost force are among the most critical. Recently, elements of the 4th Battalion, 68th Armor, airdropped equipment and then parachuted the crews into an area "behind enemy lines." The success of this test enhances both the strategic and tactical mobility of the airborne division and its armor battalion. Through airdrop, the armor battalion can be in place as a covering force quickly and the range of the covering force from the airhead can be extended.

Since ancient times, armies have tried to combine strategic and tactical mobility in one ground combat organization. There were some successes and many failures. Genghis Khan's mobile hordes dominated Eastern Europe in the 13th century, but they could not win in set-piece battle against the Western World. Napoleon's foot-loose *Grande Armee* proved its superiority to the conventional armies of the 18th and early 19th centuries but never conquered the vast spaces of Russia. In the American Civil War, steam-powered rail and sea transport accelerated strategic maneuvers but hindered the tactical mobility of the troops they carried who could not determine a way to extend their supply lines from the rail or beachhead.

The experience of World Wars I and II was an elaboration on the same theme—fleets of aircraft and ships projected military power into the farthest corners of the globe, but, immediately after the landings at Salerno, Guadalcanal and Normandy, tactical mobility generally reverted to the pace of the slowest element.* The major innovation of the Cold War era—the helicopter—restored the capability for battlefield maneuvers but created a need for enormous logistic bases which literally had to be preinstalled before the fight.

How, then, does airborne armor fit into the age-old evolution of tactics and strategy?

The green light flashes on, and the jumpmaster's shout of "GO!" is hurled away by the wind. Within seconds, the aircraft has emptied, and we are suspended above a dazzling scene. Etched sharply against the ground, five *Sheridans* wait silently for their crews. The low-altitude parachute extraction system (LAPES) placed them on the DZ about 100 meters apart. Each has a different-colored panel on the turret, and each man now steers his *MC1-1* parachute for a landing near his *Sheridan*.

Absorbed in our maneuvers, we almost overlook the most vital fact of our airborne arrival: Not a shot has been fired at us. We are miles from our objective, and the enemy cannot afford to disperse to cover every open field or dirt road we can use for entry into his rear area.

Steering into the wind, we prepare to land. The ground slams up to meet us. After spitting dirt and rolling to my

Lieutenant Colonel Albert S. Britt is a senior research fellow, National Defense University, Washington, D C. He received a B S from the USMA, an M.A from the University of California and is a graduate of the USACGSC. He has served as a tank company commander in Korea and in Germany, as battalion commander, 4th Battalion, 68th Armor, 82d Airborne Division, Fort Bragg, N.C.; and as assistant director, Army Staff, Office of the Chief of Staff, US Army, Washington, D C.

*Even Patton's dramatic exploitation across France did not begin until nearly two months after the Normandy landings

feet, I find myself less than 20 meters from my target—the platoon leader's *Sheridan*. I see others are already moving toward their vehicles. They begin derigging at once. In less than 30 minutes, the entire platoon is derigged, and the crews begin mounting 50-caliber machineguns and conducting hasty prefire checks. One *Sheridan* will not start. The platoon sergeant switches a battery to replace one apparently damaged by the landing. Another tank commander reports the loss of intercom. These difficulties cannot be overcome out in the open.

The platoon has to move rapidly into the cover of the wood line along the DZ. There, each crew conducts prefire checks on the conventional weapons systems and runs complete missile check-out procedures. While his platoon sergeant supervises these activities, the platoon leader studies his map. His immediate mission is to move on a predesignated route and join the rest of Alpha Company. The company will occupy a portion of the general outpost (GOP). Thirty miles forward of the division airhead line, the light armor task force will execute a classic mission—covering force.

The standard field manuals are virtually silent on the role of airborne armor. What they should say is this:

The armor battalion of the airborne division is employed in roles that take maximum advantage of its ability to deploy rapidly to any part of the world, its excellent cross-country mobility which allows rapid movement away from the drop zone and its long-range antitank capability. The battalion is ideally suited for use as a covering force. Attachment of infantry, air defense and engineers is most desirable and provides a combined arms task force which, with tactical air support, can operate at a distance from the airhead and cover a broad sector during hours of daylight and darkness.

Opinions differ as to how far the armor forces should advance from the airhead. The lessons of Vietnam seem to prove that no unit should venture beyond supporting distance of the division's organic artillery. However, this principle deserves review since the range of the 105mm howitzer limits the distance of the GOP from the airhead. Organic self-propelled 4.2-inch mortars and tactical air support will have to suffice for protection on the GOP.

Besides, to accomplish the mission effectively, the covering force will avoid decisive engagement. Its commander will select delay positions that afford three principal advantages: long-range fields of fire for his *Shillelagh* missiles; covered routes of withdrawal; and concealment from aerial observation. When the enemy closes to conventional 152mm range, each team withdraws to the next delay position.

During the delaying action, the enemy will make every effort to envelop and destroy the covering force. The task force commander uses observation posts, continuous reconnaissance by the scout platoon, ground radar and air cavalry to ensure that an advancing enemy force does not turn his flank or surprise him in position. Hasty obstacles are created where necessary by engineers and by armor crewmen using organic pioneer

equipment. Selection of primary and alternate firing positions at each delay position is based on fields of fire, overhead concealment and ground cover. Sheridan *platoons are trained to "rehearse" the delay sequence during movement forward to the GOP. Team commanders and platoon leaders are prepared to act independently if events do not occur in accordance with the task force plan. Limited counterattacks may be used to extricate forces which are cut off or become engaged in close combat.*

Detailed planning and reconnaissance for the covering force action are of limited value since the task force will not have seen its zone of action prior to the airborne assault. Therefore, independence of mind and understanding of fundamental tactical doctrine are essential for carrying out the mission.

The *Sheridan* platoon leader is a multipurpose leader. To extract the last minute of delay from his assigned hilltop or valley, he must be resourceful and energetic. He must know how to adjust mortar and artillery fire, how to create an obstacle or how to improvise a stream crossing. He must know which routes to take and which ones to avoid. He must develop a gambler's instinct to reckon the odds on every course of action. Once it starts, the pace of the action will not forgive a wrong turn or a misread map. Every *Sheridan* tank commander must remember that he is a high-risk leader because airborne units never fight for anything except important objectives—objectives which, when seized, will cause the enemy to turn and fall upon the attackers in his rear.

Upon completion of its covering force role, the armor battalion task force executes a passage of lines through the reconnaissance and security lines of the brigades on the airhead line. In accordance with instructions from the division commander, the task force must be prepared to detach one or more companies for use by brigades in defensive operations. The final task organization and posture of the defending brigades are not established until the covering force has completed its delay and helped identify the main enemy threat. Therefore, company/team commanders must remain prepared for employment in any portion of the division area once they have completed passage of lines.

During this portion of the fight for the airhead, platoon leaders and team commanders must look both ways simultaneously—toward the enemy to their front and to the defensive positions in their rear. If the enemy is exerting strong pressure, the passage of lines will be more difficult. Complicating the operation will be each brigade commander's understandable impatience to coordinate with his armor attachment before it arrives. The armor battalion staff must facilitate the transition from covering force action to defense by active liaison with division and brigade headquarters even while the covering force action is in progress.

One critical measure must be accomplished at some point between the GOP and the main defensive positions—replenishment of the task force basic load of ammunition. Aerial delivery by use of 8-foot modular plat-

forms and *A22* containers is the fastest means. Team commanders must be prepared to accept heavy drop resupply at intermediate delay positions, immediately to the rear of defensive positions on the forward edge of the battle area, or in assembly areas in brigade or division reserve.

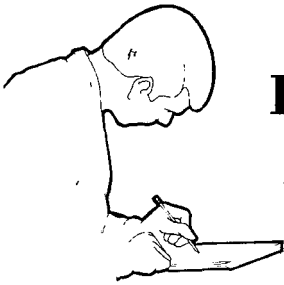
That portion of the task force which remains under division control withdraws to assembly areas and prepares to conduct limited counterattacks or occupy blocking positions. In view of the airborne division's relatively constricted airhead line and its immobile posture, the division will most likely conduct an area defense. Employment of the division reserve will, therefore, be under control of one of the defending brigade commanders rather than under division control.

The armor battalion may remain in division reserve for days without being committed, or it may be employed minutes after arriving in its assembly area. Recovery and repair of disabled *Sheridans*, resupply of ammunition, reconnaissance of routes and positions and coordination of counterattack plans are priority considerations in each commander's mind. Improvisation again becomes the watchword since virtually everything is in short supply—repair parts, fuel, ammunition, all are brought in on *C130* sorties. The commodity in shortest supply, however, is time. If the battalion is committed now, it will be the division's last wild card. It must be played well, without faltering and without hesitation, which means that *Sheridan* platoons must move promptly and decisively to wherever they are needed.

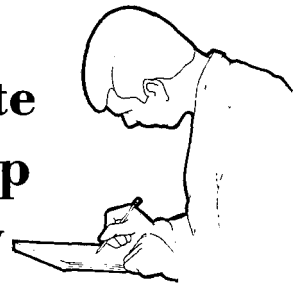
Enough of doctrine. The 2d Platoon is ready to move. It has come a long way since the alert began the day before. Other *C130s* are bringing the rest of the task force from the forward staging base. Suddenly, the enemy's rear area is alive with *Sheridans* on the move to their objective. The first battle of the next war is nearly won. MR

Bibliography of Military Affairs In 1972, Kansas State University published *Doctoral Dissertations in Military Affairs A Bibliography* by Allan R Millet and Benjamin F Cooling The bibliography has been updated five times since then by the original authors, the annual supplement appearing in the February issue of the *Military Affairs* journal The 1978 supplement (VI) was selected and compiled by Calvin L Christman and Dennis E Showalter It contains information on military-oriented dissertations published through September 1977

The authors presently are in the process of compiling the 1979 supplement and would appreciate information on omissions in the 1978 listing and new dissertations which should appear in the next supplement Such notes should be sent to the *Military Affairs* editorial office, Eisenhower Hall, Kansas State University, Manhattan, KS 66506



Five-Minute Leadership Summary



Major Joe C. Creel, US Army

Read each sentence and circle the punctuation that you feel best describes yourself.

1. I am a soldier ? . !
2. I am a professional ? . !
3. I give my best effort every day ? . !
4. The Army is more than a job, it's a profession ? . !
5. I know my job ? . !
6. I know my organization ? . !
7. I am the best there is at my job ? . !
8. I will accomplish my mission ? . !
9. I encourage my subordinates to be honest with me ? . !
10. I solicit the views of my subordinates ? . !
11. I can take criticism ? . !
12. I make the decision that is best for the organization without regard to personal interests ? . !
13. I assign duties based upon a person's ability ? . !
14. I can change to accept new ideas, new techniques and new organizations ? . !
15. I am self-confident ? . ! .
16. I am well-read on current world affairs ? . !
17. I am only a small part of the organization ? . !
18. I can leave now and my organization will function ? . !
19. I am an excellent representative of my service to the civilian community ? . !
20. I can discuss a problem without arguing ? . !
21. I can correct without alienating ? . !
22. I can counsel without criticizing ? . !

---

23. I can check without snooping ? . !
24. I can critique without destroying someone's efforts ? . !
25. I accept responsibility for my actions ? . !
26. I am responsible for my organization's effectiveness ? . !
27. I trust my subordinates ? . !
28. I am physically fit ? . !
29. I maintain government property as if it were my own ? . !
30. I look out for the welfare of my subordinates ? . !
31. I maintain an excellent military appearance ? . !
32. I adhere to the same standards that I require of my subordinates ? . !
33. I am an active participant in the local community ? . !
34. I practice and encourage creative thinking ? . !
35. I make sound decisions ? . !
36. I can accept other's views on a problem ? . !
37. I support my superior's decisions as if they were my own ? . !
38. I strive to achieve realism in training ? . !
39. I eliminate unnecessary work ? . !
40. I think of my subordinates as people not things ? . !
41. I realize that I must strive to become a better leader ? . !
42. I know that my organization is a direct reflection of the leadership I display ? . !
43. I adhere to the highest professional and personal code of ethics ? . !
44. I set the example ? . !
45. I am a leader ? . !

Critique: number of responses for each punctuation ?☐ .☐ !☐
This reflects how you see yourself.
Now ask your superior and/or subordinate to complete the same questions as they see you. If the responses are the same, congratulations! If not, strive to improve. Good leaders are always seeking improvement, but great leaders capitalize on their strengths and correct their shortcomings.

Major Joe C. Creel is with the Office of the Deputy Chief of Staff for Logistics, US Army, Europe, Heidelberg, West Germany. He received a B.S from Jacksonville State College, an M.B.A. from the University of Alabama and is a 1978 USACGSC graduate. He has served two tours in Vietnam and as an instructor in leadership/management at the US Army Quartermaster School, Fort Lee, Va.

Interoperability of Allied Forces in Europe: Part II

Allied Interoperability Between World Wars I and II

BOTH entente and Central Powers coalitions found that wartime alliances were far different from peacetime plans and promises. Yet, when World War I ended in 1918, the victors, as well as the vanquished, remembered nothing and forgot nothing as far as lessons of interoperability were concerned.

For one thing, it was never supposed to happen again; the League of Nations would see to that. For the next 20 years, Europe rested its hopes on a comparatively tranquil international scene, war weariness, disarmament hopes and "collective security." The latter policy meant anything but allied interoperability in peacetime. Distance, language and nonsupportability reduced France's Eastern alliances to surround Germany to a sham. Only in the West might it theoretically count upon partners such as Belgium and Great Britain.

Until the advent of Mussolini and Hitler in the wake of world economic depression, there literally was no need for anything beyond promises and naive expectations of continued peace. Britain's focus was imperial not continental France based its hopes on the

Benjamin Franklin Cooling
and
Lieutenant Colonel
John A. Hixson, US Army

It appears that the Allies of World War I learned very little in the way of military cooperation during the 20 years of relative peace on the European continent. On the eve of World War II, the interoperability lessons learned in war had been "unlearned" again. Differences in language, political views, personalities, organization, equipment, doctrine and perceptions of the objective are problems in any coalition force, but the paramount problem, through the ages, has been the failure to develop cooperation and measures at the operational level during peacetime. Does the current NATO military planning reflect any progress in solving the problems of interoperability, or must we learn the "lessons" again under harsher circumstances?

Part I of this article appeared in the August 1978 *Military Review*.

fact that 1914 could be repeated once again in some hour of need. Germany might enjoy a brief honeymoon with Russia in order to use the latter's Lebensraum for German rearmament, but neither Hitler nor Stalin truly trusted another dictator. Mostly, however, the citizenry from America to the Rhineland was disillusioned by arms races, the death toll from the trenches and their leaders' diplomatic machinations gone sour. National rivalries, only dimly sublimated by necessity from 1914-18, once more raised their heads in peacetime.

Mussolini's incursion into Abyssinia, as well as Hitler's bluff over the Rhineland in 1935 and 1936, led to resumption of military staff consultations between Great Britain and France.[1] Even then, "these were rigorously confined to a low level of exchange of information by military attachés and consequently were of very little use" in British eyes.

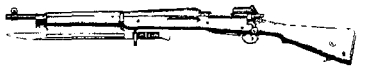
It was all a repetition of the pre-World War I scene. Random crises generated cursory, discontinuous "staff consultations." As always, the official British government policy tried to avoid any formal Continental commitment. There was a diplomatic problem that Britain and France as signatories of the Locarno Treaty were not supposed to hold secret conversations without informing Germany and Italy. This became increasingly transparent after 1935. More importantly, Britain's military leaders shunned notions of staff talks with the French while, paradoxically, increasing their conviction that an expeditionary force should be re-created and that it would be employed on the European continent.

As Major General Sir Henry Pownall, the director of military operations, put it, in April 1938 when low-level staff talks were again being arranged:

We never wanted formal *Staff Conversations, but we* do *want an interchange of information so that we can settle the administrative problems that would occur if British troops had to be landed in France. That could easily be put in hand without any sort of pledge whatever.*

Such "administrative problems" were not "easily put in hand" as Brigadier (later Major General) L. A. Hawes discovered later in 1938 when he headed a War Office action team on this problem.[2] Hawes instituted a series of cross-channel visits, clandestine negotiations with local as well as military officials in France and even studied the plans and war diaries of the 1914-18 war in order to complete his mission. "Overt action was expressly forbidden," he recalled, and the British brigadier circumvented this traditional myopia of the home government by instituting correspondence and questionnaire liaison with the French.[3] As before World War I, a small group of staff planners, as well as the chiefs of the services, handled the whole scheme of prewar interoperability in the Anglo-French sphere.

It was the same for other partners such as Belgium, France, Poland and Czechoslovakia. Only the top government officials, civilian and military, plus their military staffs carried out allied liaison. Always, they were frustrated or channelized by shifting diplomatic policies and national priorities. For instance, France and England drew closer militarily at a time when Leopold, king of the Belgians, and his chief military adviser, General Robert van Overstraeten, were drawing tight the restraints of Belgian neutrality, including the breaking off of recognized military communication channels through general staffs and defense ministers.



Political Differences

Ambiguities of domestic politics in Britain, France and Belgium, the impracticability of Western support for Eastern "allies" like Poland and Czechoslovakia (as well as alliance credibility once the latter "fell" to the Nazis as a result of Munich) and the pitiful state of military preparedness in all the countries combine with divergent personalities impacting on the course of events. The roles of politicians like Neville Chamberlain and his secretary of state for war, Hore-Belisha, or military chieftains such as French General Maurice Gamelin and the British Lord John Gort leap from the historical record because, in each case, they affected the direction and character of interallied operability. It was not until 29 March 1939—barely six months before Hitler's panzers rolled into Poland—that French and British staffs could get down to the serious business of concerted planning for defense in the West.

Even then, differences of national aim, command and control, strategy and logistics clouded the picture. The French naturally emphasized pre-eminently defense of French soil. The British took a somewhat broader view. Still, British leverage on policy and strategy was limited since the British Expeditionary Force (B.E.F.) would only put four divisions into line in the event of war. Gort, as chief of the Imperial General Staff, was determined that there should be no repetition of the friction that characterized Anglo-French military relations in the Great War when an Allied supreme commander was not appointed until the spring of 1918. The B.E.F commander would be no more than an army commander under French supreme command in the next war except that he would have an escape valve through appeal to the home government.

On the other hand, British air and sea forces, its major contributions to the alliance, were to be under independent national command. Lacking, however, were sufficient French airfields to handle major fighter and bomber squadrons of the Royal Air Force. The naval effort was overwhelmingly British.

The policies, resources and military forces of the Belgians (the Netherlands having been virtually written off as unsupportable) remained nebulous. The Belgians remained suspicious of subordination to the French in the event of war and, despite professed neutrality, projected at least a tepid enthusiasm for informal liaison with the British through contacts in the Belgian royal household. But the direction of prevailing political winds in Belgian foreign policy rendered it quite difficult for Anglo-French planners to congeal that aspect of alliance negotiations.

Subtly pervading the scene in all camps were memories of the direction and nature of alliance fighting in World War I. Several British generals later noted that nearly everyone at the rank of lieutenant colonel in the 1939 B.E.F. had fought in France in the Great War. Thus, terrain, allies and cultural features were all quite familiar—the sense that "we had seen it all before."

But, of course, this was a mixed bag. They remembered both the good and the

bad of their French civilian and military friends, the engendered complacency of passing the same way twice, the arrogance of playing second fiddle to any ally. Such factors blinded all partners to nationalistic differences between the poilu and the tommy of 1914 and 1939, as well as their differing equipment, doctrine and purpose.

For example, French intelligence estimates of German intentions remained fixed upon an exact repetition of the 1914 offensive despite strong indications of other options open to the *Wehrmacht*. Whether or not British officers really knew or understood the nature of the French military in 1939 remains unclear. Equally unclear is the French knowledge of its ally

One of the most perceptive students of the Anglo-French alliance in 1939-40, Brian Bond, emphasizes four points about allied interoperability prior to the outbreak of the war.[4] First, he says, the British government's dilatory policy on rearmament and acceptance of a Continental military commitment was bound to have serious political and military repercussions. It lessened British credibility in the eyes of French public opinion, reinforced French army feelings of supremacy and, coupled with Belgium's ambiguity, failed to provide a counterweight to French influence.

Secondly, Anglo-French contingency planning in the summer of 1939 was badly adapted to meeting the realities of the political and strategic situation which unfolded in September Poland received no support due to Anglo-French underestimation of the power and skill of the blitzkrieg Lack of understanding with the Soviet Union rendered economic warfare as well as allied policies impotent in Eastern Europe Ironically, underestimation of the decisive possibilities of blitzkrieg combined with an overestimation of Germany's abilities and intention to launch an aerial blitzkrieg on Paris and London. Consequently, the allies neglected their other offensive instrument of strategic bombing at the outset of the war for fear of devastating retaliation.

Thirdly, observed Bond, Belgium's neutrality caused recriminations and lack of confidence both in Britain and France. Gamelin's dilemma of how to stop a German attack well forward in Belgium in the absence of prior joint Anglo-French-Belgian planning and the knowledge that the French would be invited in only after the onset of the attack was an unresolved problem during the prewar and subsequent "phoney war" periods.

Finally, interwar differences in British and French defense and foreign policies were submerged, and no attempt was made to reach an accord Such delicate matters were scarcely discussed during the few months of the alliance's wartime existence.

More Failures

In any event, the Western allies might have better used the last six months before the invasion of Poland to solidify their coalition. True, British division and corps commanders like Sir John Dill, Maitland Wilson and Harold Alexander visited the French capital and toured the Maginot line in May 1939. Late that summer, Gamelin paid a return visit to the British tattoo at Aldershot.

"The greatest cordiality obtained on

both sides," observed one of Alexander's biographers, "but in the event it was to be shown that cordiality alone is a poor weapon in modern total warfare."[5] Top-level coordination obscured the true state of conditions within the various national military forces as well as the operational weaknesses between them. Still, the nine-month "phoney war" or *drôle de guerre* in the West after September 1939 might have permitted rectification of many problems.

When war finally came in September 1939, the Western allies were able to collect Anglo-French forces in northern France while Hitler's armies subdued Poland. The subsequent winter of quiet permitted France, Britain and the Low Countries to prepare for the eventual invasion by Germany.

That their preparations proved inadequate or misdirected in May and June 1940 was due, in part, to serious chinks in the alliance. Despite Belgian neutrality, some intelligence information was shared by that country with both the French and British military commanders, and clandestine visits by key British generals to Belgium to prepare for the inevitable push forward to battle the Germans on the frontier permitted a modicum of learning about defenses, roads, lakes, forests and artillery positions. Even so, there remained much ignorance on the parts of the British and French as to Belgian operational plans, defensive obstacles and military installations.

Part of the fault lay with the Belgians and their neutrality, part with faulty intelligence work, poor liaison between British and French headquarters and excessive secrecy. Most Frenchmen at general headquarters had no idea how the Belgian army's fuel supply service was organized.

How far official staff conversations might have alleviated such problems must remain speculative. In fact, major imbroglios might have been prevented, particularly between the British and the Belgians over road use on the outskirts of Brussels when both armies were rushing forward to fight the Germans in May. Elsewhere, French headquarters permitted the meager B.E.F. (sandwiched between the First and Seventh French armies in the northeast army group) to send smaller units to get "bloodied" on outpost duty before the Maginot line. Cooperation and coordination were obviously varied.

It was not enough that French army commander Gamelin and his subordinates had signally failed to see the true intent of German plans despite accumulated intelligence reports. But the allies also were handicapped from the start by "an incredibly cumbersome command and staff structure," by inadequate liaison arrangements and by poor political as well as military communication arrangements. Furthermore, senior French Generals Gamelin and Georges enjoyed strained relations, and the French premier wanted to sack the latter.

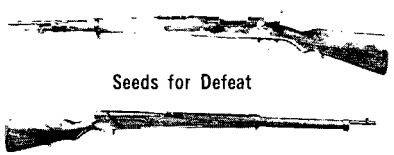
Distrust among the Dutch, Belgians, French and British due to numerous false alarms from November to April "had created a fund of ill-will and prejudice which would be speedily drawn upon when things began to go wrong." It did not help that Belgian King Leopold's warmth was offset by his army chief Overstraeten's earned reputation as "evil genius" among his peers of the Anglo-French contingent.

When the Germans did strike in May, the allied move into Belgium took place fairly smoothly. True, the British and Belgians hassled about roads; General

Alexander played a game of linguistic and diplomatic contretemps with Overstraeten in an interview with King Leopold; and division commander Bernard Montgomery showed his usual pluck when faced with a touchy situation whereby his own division and a Belgian division were both situated in the same sector and interfaced one another. Montgomery placed himself initially under the Belgian's direction, knowing full well how to get the ally out.

When the Germans came within artillery range and shelling began I had no difficulty in taking over the front from the Belgian division; it moved into reserve and then went northwards and joined up with the main body of the Belgian Army.

Still, the British maintained at least five army-level liaison teams, as well as Major General Sir Edward Spears as Prime Minister Winston Churchill's personal representative with French Prime Minister Paul Reynaud Obviously, the French tongue was no barrier at that level, and, indeed, even division commanders like Alexander had no difficulty speaking and understanding that language—much to the consternation of "allies" like General van Overstraeten.



Seeds for Defeat

The unexpected breaching of French lines on the Meuse, complete collapse of French morale, the precipitous surrender of the Belgians and the unilateral withdrawal of the B.E.F. from Dunkirk all led to months, even years, of squabbles and recriminations between erstwhile allies. The seeds for the defeat of Belgium, France and even all of Western Europe but Great Britain lay in the prewar years of neglect, political chaos and traditional nationalism.

In the end, liaison missions, a common enemy and whatever measure of allied interoperability was effected in the chaos of a six weeks' war could not overcome Anglo-French-Belgian unpreparedness, superior German martial proficiency and the reluctance of a third Great War ally—the United States—to rejoin the effort to effect an outcome on a Continental battlefield.

Actually, there was little that America could have done at the time. Committed politically to isolationism in a presidential and congressional election year, possessing an understrength and half-prepared Army and Pacific-oriented Navy, the United States, like Great Britain, had waited too long behind a maritime moat. Like the British, American senior service colleges had spent little time studying the practicalities of alliances, particularly the lower operational experiences of the past. The few lectures at the Army War College during the interwar period, for instance, had been delivered largely by Major General Fox Conner, and we know his attitude on allies

Still, Conner's comments in 1939 were fairly typical of professionals around the world Scarcely a year and a half later, across the Atlantic, other Anglo-Saxons were breathing similar sentiments. Even George VI, king of England, wrote after Dunkirk: "Personally I feel happier now that we have no allies to be polite to and pamper." Ironically, within the year, Great Britian was once more back into an alliance of sorts, however informal or clandestine that was prior to December 1941. But, then, that was right and proper—after all, Americans spoke the same language and

agreed that defeat of Germany and preservation of the United Kingdom was of highest priority.

The warring powers of 1941-45 learned the lessons of World War I all over again. Neither Axis allies nor the Grand Alliance of Russia, Britain and the United States experienced anything new with interallied operability. It was all there in the historical record. After World War II, the unsettled conditions of the Cold War negated a return to 1920-style "normalcy." The North Atlantic Treaty Organization and the Warsaw Pact injected a new requirement for peacetime allied interoperability onto the face of Europe. After nearly three decades of existence (only 22 years for the Warsaw Pact), serious questions remain as to the application of wartime interoperability lessons to a peacetime setting. Today, we seem to be perpetuating traditional peacetime neglect.

A study of the historical tableau, then, suggests the following conclusions:

- That the impact of language differences; personal, regional and national animosities; individual and national political views; personalities; organizational, equipment and doctrinal differences; and perception of objective will vary in direct proportion to the number of allies in the coalition.
- That little in the way of measures to effect functional-level military cooperation was ever developed and/or adopted by any coalition prior to the commencement of hostilities.
- That practical military cooperation among allied units will be effected in some manner because of basic necessity, regardless of higher level agreements.
- That military cooperation in the past has occurred on the ground during the conduct of operations because the nature of these operations has generally determined their form and effectiveness.
- That prior study of coalition warfare problems and a detailed knowledge of allied capabilities and limitations could have measurably reduced these problems.
- That the more allied armies resemble each other in organization and equipment, the more likely they are to agree on doctrine although tactical methods will differ even when the allied forces are similar in organization, equipment and military thought.
- That coalition warfare will require an increase in liaison with team personnel carefully chosen on the basis of language proficiency, tact and military knowledge of the allies. Such requirements would seem highly advisable for all echelons of any national military organization working in an allied force environment.
- That commanders will not readily give up control over their logistics and signal communications has been a "lesson" of two world wars in this country, but not comprehended by peacetime allied planners.
- That allied cooperation in the initial stages of a coalition effort will be characterized by confusion, misunderstanding and hard feelings. A major catastrophe befalling one of the coalition members, especially a weaker one, may have a radical political and military effect on the entire coalition.
- That although a coalition may intend to conduct operations with each national force having its own separate zone of operations, the demands of prolonged combat, especially defensive combat, will cause the allied force to become progressively more integrated in its composition.
- That the primary factors contributing to the effectiveness of Anglo-

American cooperation at all levels in two world wars were a common language, clearly defined goals and a traditional cultural and political heritage.

● That national political and military sovereignties and policies determine and limit what actions can be taken in peacetime to effect closer military cooperation among allied forces. But the dominant factor in developing effective military cooperation—available lead time for problem solving—is only truly available in peacetime and should be exploited accordingly.

Perhaps Field Manual 100-5, *Operations,* 1 July 1976, does outline the factors affecting NATO operations But coverage is cursory, human memory short and the rotation of assignments so rapid that allied interoperability lessons receive only passing attention at any level. The US Army lacks a tradition, and its military educational system currently minimizes the factor of functional allied interoperability. Yet, since 1941, the US military forces have performed mainly as part of an allied team. The fields of Flanders, as well as the steppes of Russia, have been strewn with the flotsam and debris of wrecked coalition armies which failed to heed in peace the wartime lessons of allied interoperability.

Surely, the historical examples we have examined here and the foregoing conclusions to which they have led us provide a clear and unmistakable answer to our initial question of what needs to be done now to prepare for international military interoperability in a time of war. Should we again fail to heed these warnings, the result will be equally predictable. The only unknown will then be upon which battlefield the wreckage will lie

NOTES

1 Guy Chapman *Why France Fell The Defeat of the French Army in 1940* Holt Rinehart and Winston N Y 1968 L F Ellis *The War in France and Flanders 1939 1940* History of the Second World War United Kingdom Military Series Her Majesty s Stationery Office London Eng 1953 *Examination for Admission to the Staff Colleges at Camberley and Quetta Held in February March 1937* War Office Great Britain Her Majesty s Stationery Office London Eng 1937 Henry Karslake South of the Somme May June 1940 *The Army Quarterly and Defence Journal* January 1972 pp 221 32 Bernard Montgomery *Memoirs* World Cleveland Ohio 1958 and Louis Morton Germany First The Basic Concept of Allied Strategy in World War II in Kent Roberts Greenfield *Command Decisions* Office of the Chief of Military History Washington D C 1960

2 L A Hawes The Story of the W Plan The Move of Our Forces to France in 1939 *The Army Quarterly and Defence Journal,* July 1971 pp 445 56

3 *Ibid*

4 Brian Bond *France and Belgium 1939 1940* Davis Poynter London Eng 1975 especially Chapter 1

5 Norman Hillson *Alexander of Tunis* W H Allen London, Eng 1952 p 67

Benjamin Franklin Cooling is assistant director, Historical Services, US Army Military History Institute, Carlisle Barracks, Pa He received a B A from Rutgers University and an A M and Ph D from the University of Pennsylvania His article "Creighton Abrams at the US Army War College" appeared in the June 1978 Military Review

Lieutenant Colonel John A Hixson is chief, Oral History, US Army Military History Institute, Carlisle Barracks, Pa He received a B S from the USMA, an M A from Rice University and is a 1977 USACGSC graduate He has served in the History Department at the USMA and with the XVIII Airborne Corps Artillery, Fort Bragg, N C

MR REVIEWS

R.U.S.I. and Brassey's Defence Yearbook, 1977/78

This is the 88th issue of *Brassey's* and the fourth to be edited by the Royal United Services Institute for Defence Studies.

The period reviewed by this year's *Brassey's*—1976 to mid-1977—saw no major wars. However, new governments in the United States and China, plus the continued growth of the Warsaw Pact military forces, made it a time of considerable interest. Comment on the period is made by some distinguished contributors, among which are Field Marshal Lord Carver, Great Britain; General Roman, chief of staff of the Belgian army; Peter Janke, Institute for the Study of Conflict; Winston Churchill, British member of Parliament; and Alvin Cottrell, Center for Strategic and International Studies.

Lord Carver assesses both the past and present role of Britain's forces and surveys the problems facing its defense effort. An article on the armed forces of Iran, India and Pakistan by Cottrell assesses the relative balance of power between these countries and concludes that Pakistan's military weakness could leave it open to outside intervention in support of local guerrilla groups, potentially leading to regional war. This becomes especially interesting in light of the recent coup in Afghanistan by left-wing army rebels which could eventually provide Moscow with the long-awaited access to the Arabian Sea. The possibility of terrorists using nuclear weapons as a threat is discussed by Peter Janke, and Winston Churchill looks at South Africa.

Part II of the yearbook is devoted to recent developments in weapons technology and includes a special article on strategic weapons by Robert Pfaltzgraff, director of the Institute for Foreign Policy Analysis. Part III is a selection of titles in the field of defense studies published during the period June 1976 to May 1977 and a chronology of main events having defense ramifications. The yearbook is published by Westview Press, Boulder, Colorado.

USSR Facts and Figures Annual

Edited by John L. Scherer

In contrast to *Brassey's* 88-year history, the *USSR Facts and Figures Annual (UFFA)* began its first year in 1977 with Volume I. The publisher, Academic International Press of Florida, plans a summer publication of each new annual.

UFFA is the only reference work to present in one standard format all basic relevant and public reference-type information on the Soviet Union today. Based on a variety of official, private and international sources, the data are organized into 15 main categories: government; party; republics; demography; armed forces; economy; agriculture; health, education and welfare; communications; transport; institutions; special topics; and sports.

Much of the material found in *UFFA* has not appeared elsewhere in English. Many of the useful tables found in other sources have been updated and corrected. The annual probably contains more information about the Soviet Union than can be found in any other one reference source. Each revised and updated annual will present new and substantial information, making *UFFA* a key source for current and retrospective data on the USSR.

Yearbook on International Communist Affairs, 1978
Edited by Richard F. Staar

There are no indications that Moscow has changed its thesis about the correlation of world forces having tilted irreversibly in its favor. According to the Hoover Institution's 1978 yearbook, this outlook and considerations of prestige as a superpower undoubtedly explain continuing efforts to strengthen the Soviet military arsenal as well as engage by proxy in politico-military intervention, especially throughout Africa.

The *Yearbook on International Communist Affairs*, now in its 12th year of publication, continues to be the most complete, authoritative and up-to-date single reference work on the ruling Marxist-Leninist organizations of the world. The current edition, encompassing calendar year 1977, discusses such events and developments as the increasing Soviet and Cuban involvement with the "liberation" struggle in Africa and the emergence of Communist-dominated governments in Angola, Ethiopia and Mozambique; the impact of Eurocommunism, spearheaded by the Communist parties of Italy, France and Spain and its effect upon Hungary and Poland; and the consolidation of the regimes in Southeast Asia.

The present edition of the yearbook contains contributions by 63 experts on Marxist-Leninist movements in 85 countries around the world. Included are authors such as Richard Sim, Barbara Reid, Douglas Pike, William Ratliff and Paul Magnelia to name but a few. Also, much of the information comes from primary source materials in the native languages.

Excluded from the yearbook are Marxist liberation movements that specifically disclaim being Communists.

World Armaments and Disarmament, SIPRI Yearbook, 1978

It is estimated that the tens of thousands of nuclear weapons in the arsenals of the world today are equivalent to one million Hiroshima-type atomic bombs, according to the recently published yearbook by the Stockholm International Peace Research Institute.

In its review of developments of world armaments and disarmament in 1977, the yearbook says that global military spending is currently about $400,000 million. Measured at constant prices, the trend from the 1950s to the 1970s was a doubling of expenditures. The Third World's proportion of military spending continues to increase, with a major share being spent by the Middle East countries whose expenditure, at constant prices, has quadrupled during the past seven years.

The Geneva-based disarmament negotiations produced no treaties in 1977. The lack of real progress and the fact that member countries are repeatedly faced with ready-made draft treaties bilaterally prepared by the United States and the USSR are the cause of considerable criticism, according to SIPRI.

On the use of outer space, the book says that some 75 percent of all satellites launched have military uses. Of the 133 launched during 1977, 95 were military—82 belonging to the USSR, 12 to the United States and one to NATO. Other themes dealt with include nuclear weapon developments, the threat of nuclear proliferation, international arms trade and disarmament and development in the Third World. The 1978 edition is the ninth in the series and published by Taylor and Francis, Ltd., London.

MR

MR STUDIES

Tactical Operations System (TOS) Update. The concept for a division TOS was presented to the Army Systems Acquisition Review Council (ASARC) in January 1978. The Army position, developed by the ASARC, was to move the TOS into engineering development and procure two division systems, one to be fielded at Fort Hood, Texas, in 1979 for use in Operational Test (OT) II and the second system to be fielded in Europe in 1982. A Defense Systems Acquisition Review Council (DSARC) was scheduled for 21 February 1978, but was postponed to allow the Army additional time to address certain issues which remained unresolved at the time of the pre-DSARC meeting on 17 February. In the interim, development activities required to support TOS fielding are continuing in an effort to avert a major program slip.

- The tentative date for the TOS DSARC II was 25 July 1978.
- The Army Research Institute with contract assistance from Vector Inc. is developing a model standing operating procedure (SOP) for division TOS. This SOP will be the baseline for personnel training, operational testing and use of the fielded system.
- TRADOC system manager for the TOS has written and is coordinating the Individual/Collective Training Plan (ICTP) for division TOS. The ICTP outlines the actions required to produce a complement of training TOS users, operators and maintainers in conjunction with the development and fielding of the system.
- Integrated Logistics Support (ILS). The plan for logistic support for the TOS is contained in the development plan and decision coordinating paper. Refinement of logistic support requirements will rely heavily on the results of TACFIRE OT III and development of the *AN/TSQ73*. A contract for the Maintenance Test Support Package for TOS OT II will be awarded soon after DSARC II.
- Outline test plans for DT/OT II have been submitted for inclusion in the five-year test program. The TOS coordinated test program has been drafted and will be finalized subsequent to DSARC II.
- The Command and Control Interactive Display and Experimentation System (CCIDES) located with TCATA at Fort Hood, Texas, will be moved to V Corps later this year. CCIDES will be used to display information from the Battlefield Information Reporting System (BIRS) in the corps tactical operations center. This activity is an extension of Test 271 which has been ongoing at TCATA since 1975.
- Corps TOS software definition has progressed to include friendly situation data. This experimental software was demonstrated to interested observers during the summer.
- A study has been recommended for Fiscal Year 1979 that would provide the system analysis and definition for TOS at corps and subordinate echelons. This study, if approved, will effectively merge the division and corps TOS programs into one and should permit accelerated fielding of a completely integrated system.

Items in this department are summaries of studies currently underway or recently completed in the defense community. While every effort is made to ensure accuracy, publication lead time may result in differences between the summaries and the actual study program

MR LETTERS

Predictions for Yugoslavia

I read with great interest Lieutenant Colonel Frank Allen's article "Yugoslavia After Tito: The Soviet Threat," *Military Review*, May 1978. The article was very precise and textbook correct. I would like to amplify on a number of his basic premises and evaluate his conclusion as to the liklihood of post-Tito Soviet intervention.

Those who are not on the scene are living under the mistaken illusion that everything will be just rosy after Tito, that the eight-man rotating presidency will rise to the challenge for which it was created and that Yugoslavian independence from the Soviet orbit will be preserved. If I were living in Yugoslavia, I would be cashing in this false optimism for a weapon of some sort.

Let me begin by saying that, yes, I do believe that in time there will be a military invasion sponsored by the Soviet Union on a Tito-less Yugoslavia. I envision nothing overt happening for six months to a year after Tito's death while the pot is made to boil. If, during that time, there is any Westward leaning on Yugoslavia's part, the Soviet Union will have its justification: the preservation of a brother socialist state from imperialist-sponsored destructive forces. Their justification is really not important, for, just as in 1968 with Brezhnev's Doctrine of Limited Sovereignity for Socialist States, no one will pay much attention to it. The act will already have been accomplished.

Just what are the ingredients which can be stirred up to provide the Soviets with this first real opportunity in 30 years to bring Yugoslavia under control?

The economic disparities between the northern and southern regions will continue to be a predominant reason for grumbling and discontent. The northern section of Yugoslavia (north of the Sava River) has the bulk of industry, the grain belt of Vojvodina, easy access to Western markets and a low net birth rate. The lifestyle in Slovenia is very similar to that in central Italy. The average wage is six to seven times greater in the north than in the south.

The southern area has little access to the Western World, a high illiteracy rate (90 percent in Kosovo) and a high net birth rate. The standard of living in Kosovo with only 10 percent of its population employed is on an equal par with that of the Congo.

The poorer regions expect assistance in the form of subsidized industrialization as an earned benefit of socialism. The richer republics are understandably hesitant to cut themselves short for people who do not even speak the same language or worship the same god. The gap between the north and south is getting larger, contrary to party promises, and with it grows discontent.

I think we have a tendency to emphasize the problems between the Serbs and Croats at the expense of ignoring the difficulties with the other nationalities. It is very true that dislikes between Serbs and Croats are deep-rooted and extreme. The fact that the Croatian national flag is very seldomly allowed to fly in Zagreb, the capital of Croatia, is a good indicator of this. But little is written about the million Albanians living in Kosnet and southern Montenegro who would like very much for Albania to take over these areas, or the fact that there is a radical group in Australia collecting money to support Bulgarian irredentist designs for once-Bulgaria-owned Macedonia.

In 1969 when the more advanced Slovenes were refused a fair share of a Yugoslav loan received from the International Bank for Reconstruction and Development, they held protest meetings which de-

manded that the federal government resign. As a result of this "road affair," the Slovenians voiced the opinion that they would be better off outside of Yugoslavia. They still aspire to attaining this independence.

The most uneducated peasant, who knows nothing about politics, and cares even less, will tell you that the rotating presidency which has been created to replace Tito will not work. Although policy and procedure may not be in the realm of this peasant's comprehension, he understands only too well the differences between Serbs and Croats, Bulgarian designs for Macedonia, Albania's eagerly looking across the border and Slovenia's dream to be independent.

A rotating presidency will produce an annual leader who will promote the economic and nationalistic considerations which will benefit his republic. This will shatter any cohesion the ruling body could possibly have. Perhaps this is why there has been a recent and noticeable shift of Yugoslav National Army officers to positions of power and influence outside the Federal Secretariat for National Defense. This may be Tito's backup plan for unity.

When the country breaks up because of this factionalism, the Soviet Union will move militarily by using Hungary. The recent upgrading of the Hungarian People's Army, to include the forced retirement of 15 general officers, much improved training and closer coordination with the Soviet in-country forces, along with the revitalization of the 70,000 Soviet troops in Hungary and tremendous helicopter activity, indicates that something is in the air.

An interesting story was related to me on a recent trip to Budapest. A young Hungarian school girl was asked what she thought of the Soviet forces in her country. She answered that the Russians were her brothers. The teacher taken somewhat aback asked why she said they were brothers rather than friends or allies. The little girl answered, "Friends you can choose." Would the Hungarians go along with the Soviets in invading neighboring Yugoslavia? They answered that in 1968 when they sent 15,000 troops in support of the Czechoslovakian invasion.

Militarily, the Pannonian Plain gives Yugoslavia absolutely no defense. From the Hungarian border to Belgrade, only an overnight air insertion would be required to control the area. A secondary force could drive through the Ljubljana gap to Rijeka, securing the coveted northern Adriatic ports. By holding the northern area, the Soviets would control anything in Yugoslavia which matters, and then sue for peace.

Bulgarian forces could be used for a diversion on the east, but for little else because of the terrain and the composition of their forces. The Rumanians will do little more than lock their doors and bolt their shutters. After all, they do not want to give the Soviets justification to apply the three-in-one theory that, after Tito, the Soviets will send an army to overcome the Yugoslav nonconformists, a division to rope the Rumanian maverick and a squad to tame the Albanian natives.

What will be the world's response? The Yugoslavs will undoubtedly give any invader a fight. But as a Soviet general observing the *Golia '76* exercise replied when asked what he thought of the Yugoslav partisans, "Partisans are a definite nuisance, but they do not win wars."

Who, then, is going to win the war? Ask yourself again if you think that a nation which is still licking its Vietnam wounds is going to send its sons to a country that most people do not even know how to spell let alone find on a map. Even with his back-pedaling after the Ford-Carter debates, President Carter did not convince anyone that our response to a Soviet invasion of Yugoslavia would be any different than what he has stated. We will not commit US troops to a conflict in Yugoslavia. If we do not, no one else will.

As in 1956 and 1968, the world will not take long to forget. Relations will be resumed, and trade will continue. The only change will be that 22 million people who once prided themselves on their relatively independent stance will be just as Mihajlo Mihajlov was in 1965 for his book *Moscow Summer*—imprisoned.

Thomas N. Harvey,
Foreign Area Specialist,
9th Infantry Division

Tricky Russians

Your article about the Baikal-Amur Railway by Major Eugene D. Bétit (*MR*, November 1977) was wonderful, and his update in your April 1978 issue (*MR* Letters) was nifty too.

But I have an old citation to *Newsweek* (15 February 1939) which maintains that the BAM was begun in 1932 and completion was expected in May of 1937!

Those Russians are tricky! They've been fooling us all those years.

James Hall

Problem Solved

Attached please find my check to renew my subscription for the upcoming year. I have thoroughly enjoyed your magazine this past year and feel I have expanded my knowledge of the military through your wide range of articles.

About your new format—it presented one problem for me. I like to carry *Military Review* in my purse for reading at odd moments—like waiting in supermarket lines. The new, enlarged size didn't fit. I solved the problem in true engineering fashion (pardon the pun!)—I bought a larger purse!

Barbara Stone
Shalimar, Florida

Think Metric

I enjoy reading the *Military Review* and like the way the magazine is constructed. But there is one change that I would want to see made: All data published should be expressed in metric terminology only.

The continued use of inch-pound weights and measures tends to provide a "mental crutch" to those who do not want to use SI units. Too, mixed systems tend to retard the Army's ability to adopt a complete "think metric" policy that is now being accomplished by many governmental and private agencies.

Steven B. Black

A10 Is Not Enough

Captain Lonnie O. Ratley's article "Air Power at Kursk: A Lesson for Today?" (*Military Review*, April 1978) was a fine discussion of an exciting concept which could do much to redress the Soviet conventional force superiority in Europe. However, in arriving at his conclusion, he has overlooked some key factors which affect his thesis.

One of the basic differences between Kursk in 1943 and Europe today lies in the Soviets' use of their aviation assets. During the Battle of Kursk, the Soviets had a quantitative advantage in manpower, armor, artillery and aircraft, but these advantages were nothing like they are today. The German airfields were relatively free from Soviet airstrikes due to effective air defense which included able use of German fighters, flak and radar. This enabled the *Luftwaffe* to employ forward air bases during the battle. At that time in the war, the *Luftwaffe* did have some measure of air superiority although the balance was very soon to tip in favor of the Soviets.

NATO cannot count on secure use of forward air bases due to the preponderance of the Soviet air force with its numerical advantage. Newer Soviet aircraft such as the Sukhoi *Su-19 Fencer* and the *MIG23 Flogger* are clearly designed for long-range missions against NATO installations. Were the Soviets to invade Western Europe, they would no doubt target NATO airfields from the beginning to destroy as many aircraft as possible and to neutralize the bases. Without any bases in the eastern part of West Germany, employment of the *A10s* may well be almost impossible.

Use of the *A10* would certainly enhance NATO's defense against massed Soviet armor, but the *A10* is not a wonder weapon which can by itself defeat a Warsaw Pact invasion. Only effective use of the entire combined arms team will result in defeat of any Soviet armor offensive. To pin NATO's hopes on one weapon system could be fatal should the Soviets develop effective countermeasures.

1st Lt Albert J. Golly Jr., USAR

MR NEWS

UNITED STATES

"GHOST" TARGET SYSTEM

An electronic countermeasures system designed to force enemy weapons to guide themselves into "ghost" targets is being built for the Navy by the Hughes Aircraft Company in California.

The electronic warfare system is designed to protect carriers and other high-value ships against cruise missiles and other intruders by taking an electronic image of the target ship as it is sensed by the enemy's guidance radar, then offsetting the radar so the weapon guides itself into a false projection some distance away.

The system is expected to detect, track, identify friend or foe, and intercept low-flying antiship attacking cruise missiles by electronically deceiving their guidance systems. The device, known as the *AN/SLQ17A(V)2*, will cost $8.5 million

SADARM BEING DEVELOPED

SADARM, a "fire and forget" sensor-delivered submunition artillery system designed to destroy three tanks almost simultaneously—by bursting three projectiles from a single shell to hit the turret areas—is being continued in exploratory development.

Responsibility for this effort is assigned to the Large Caliber Weapon Systems Laboratory of the US Army Armament Research and Development Command, Dover, New Jersey

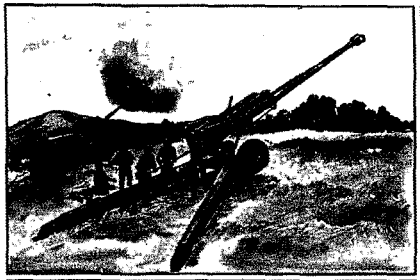
SADARM denotes sense and destroy armor. The missile can be fired by weapons now in standard use. Termed a "low-cost" system, *SADARM* is packaged, stored, handled and loaded like standard artillery rounds.

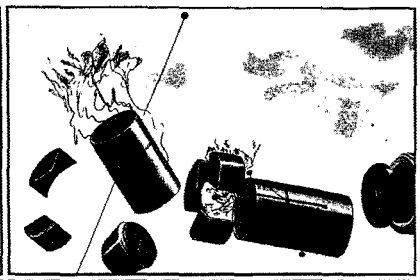
Illumination of the target, as well as external guidance and control of the projectile, is not required. Each submunition is equipped with a vortex ring parachute, a sensor, a processor, a warhead, a power supply and a safe-and-arm (S&A) mechanism.

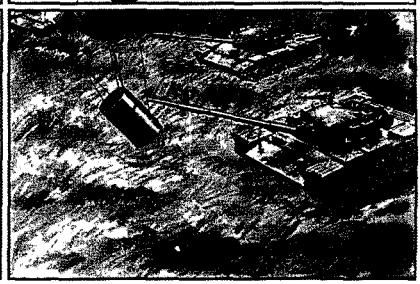
After azimuth and range to target are determined, the primary fuze is set, and the correct amount of propellant charge is loaded into the gun to deliver the round to an area above the target (photo 1).

Launch setback activates the S&A device in the round. As the projectile speeds on its ballistic path, a preset primary fuze triggers a pusher charge to eject the submunitions (photo 2).

A de-spin mechanism slows the speed of each submunition to allow deployment by the vortex ring parachute.







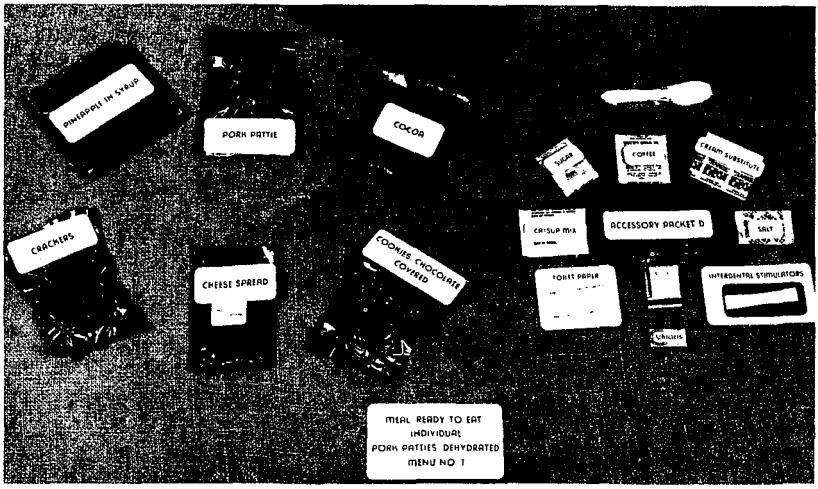
This initiates the power turn-on and stabilizes the submunition to a steady drop velocity of 30 feet per second and a rotation of about four revolutions per second (photo 3)

Parachute shroud lines are attached to the submunition canister in such a way that the canister maintains a 30-degree angle (to vertical) as it descends This gives the sensor greater scanning coverage and the submunition the desired ground coverage for use against multiple targets. When the sensor detects a target, it fires the armor-penetrating warhead (photo 4).

The new system is considered unique because it uses a passive millimeter-wave radiometric sensor in a high-spin mode at low altitude for the first time in a munition; uses a vortex ring parachute that maintains a constant-spin rate and drop velocity and is exceptionally stable; and delivers a fragment warhead with armor-penetrating capabilities.—*Army Research and Development.*

BETTER FIELD RATIONS COMING

Defense Logistics Agency News



A cup and a canteen of water are all a soldier will need to make this "meal, ready to eat," a dining delight. Packaging preserves nutritional quality, flavor and aroma.

Approved by the Food and Drug Administration, a plastic and aluminum packaging which makes it possible to preserve, store, heat and serve food in "fresh" condition promises a better ready-to-eat meal for combat troops in the near future

Thermally processed foods for ration packs have been ready for several years. The astronauts took them on *Apollo* flights and enjoyed such meals as turkey and gravy, barbecued beef, chicken à la king and chocolate nut cakes. But, until this year, the plastic-wrapped food could not be used for field rations.

According to the US Army Natick Development Center, which developed the thermoradiation process used in preparing the rations, foods retain their nutritional qualities, taste, color, appearance and aroma for years without refrigeration.

The new combat meals can be eaten as is or heated in the package which can be immersed in boiling water. In addition to the thermoprocessed (wet pack) and ready-to-eat menu items, the new meal will contain some freeze-dried fruit and vegetable which can be reconstituted with water

The new meals will not be stocked until the present supply of rations is depleted.

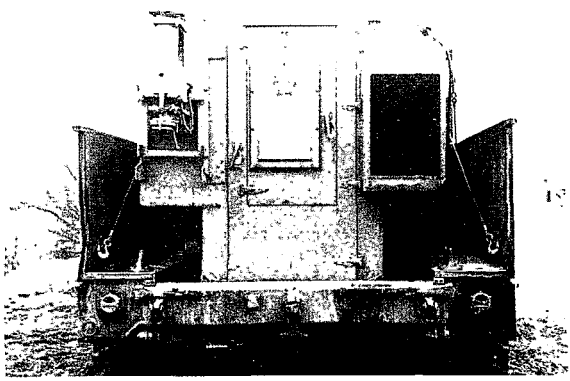
ECM SYSTEMS UNIT PRODUCT IMPROVEMENT

Reducing vulnerability and increasing the mobility of electronic countermeasures (ECM) systems is a division commander's dream Common sense and tactical doctrine call for ECM deployment well forward to enable jamming signals to reach the enemy communications receiver effectively, yet many of the Army's vehicles presently carrying these systems are not suited for this purpose. For example, the soft skin of the *M885* and *M151A1* carrying the *AN/TLQ17* exposes the crew to small arms fire and artillery schrapnel, and the *M880* vehicle mounting the *AN/GLQ3* was designed for operations on improved roads

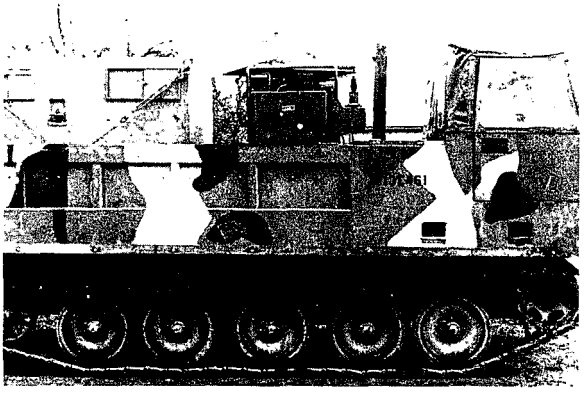
Not to be outdone by the 101st Airborne Division in their product improvement of the *AN/TRQ32* (*MR*, Feb 1978, p 100), the 8th Infantry Division in Germany has designed and constructed track-mounted jammers from division assets using the *M577A1* command track and the *M548* ammunition hauler.

Personnel of the 415th Army Security Agency Company assigned to the division dismounted the *AN/TLQ17* from its ¼-ton truck and installed it along the front shelf of the command track. The log periodic antenna was mounted on the roof of the vehicle pivoting on aluminum support posts Components of the *AN/TLQ17* were mounted using the existing truck mounts, but substituting the *KY8* resilient rubber shock absorber.

The *AN/GLQ3*, an integrally wired shelter electronic component system, was easily rigged in the *M548* ammunition hauler and fitted with a roof-mounted whip antenna. While mounting the *AN/GLQ3* inside an armored vehicle was more desirable, a complete rewiring and engineering job would have been required The component shelter was



Rear view of GLQ3 jammer in M548 ammunition carrier

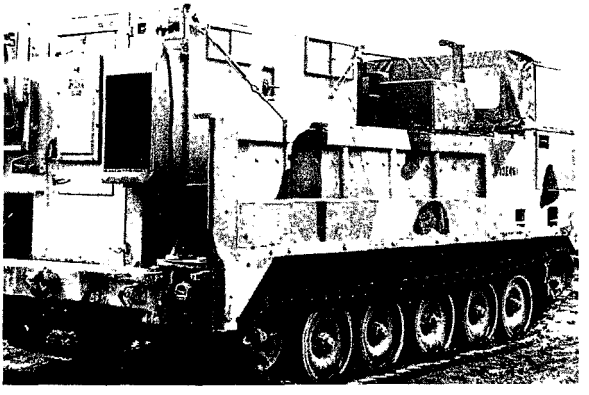


Side view of AN/GLQ3 jammer in M548 ammunition carrier

mounted on rubber, using ¾-ton truck tires when resilient rubber was not available.

The configurations were tested during the 8th Division's winter field training exercise *Cardinal Point* (7-14 February 1978). Each track-mounted jammer traveled over unimproved terrain without injury to the sensitive electronics The operational ready rate for available ECM systems during the exercise was 65 percent, which exceeds the Department of the Army norm for ECM systems in vehicle configurations. The tracks are able to transport an entire ECM team, and a two-vehicle system has been reduced to one respectively Now, 8th Infantry Division jammers are mobile, able to take full advantage of terrain and keep up with the pace of modern battle.

AN/GLQ3 jammer in M548 ammunition carrier in whip antenna mount

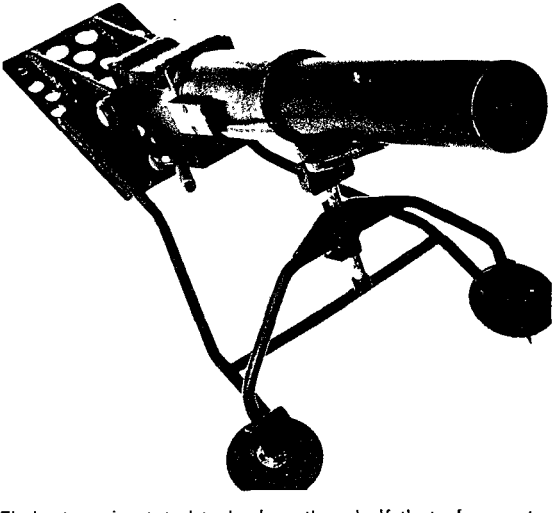


NEW 51MM ILLUMINATING ROCKET LAUNCHER

UNITED KINGDOM

Pains-Wessex and Schermuly (United Kingdom) have developed a new 51mm illuminating rocket system comprising the rocket and a specially designed launcher which folds flat when not in use. The rocket is designed to meet the requirement for a medium-range illuminating light source and is claimed to be the only one of its kind available. It can be supplied with either electrical or percussion ignition.

Although military mortars already have an illumination capability, the Schermuly 51mm rocket is intended to provide a cost-effective alternative with a greater range than can be achieved by light infantry mortars currently in service with forward infantry units. Several rockets and a launcher are sufficiently light and compact for a one-man load, and the firing procedure is simple, making the system suitable for use by even very small infantry units.



Flight time is stated to be less than half that of a mortar bomb. The trajectory is flat so that the flare is positioned at the optimum target illumination height without revealing the launch position. Ground range is 900 meters — *International Defense Review*, © 1978

ITALY

According to Hughes Aircraft Company, the first Italian airborne firings of *TOW* antitank missiles were successful recently when 33 missiles fired from an *Agusta A109* helicopter scored hits. The firings were conducted at an Italian missile range on Sardinia as part of a program to evaluate the airborne *TOW* missile system as a possible antitank weapon for the Italian Army.

TANK HUNTER

TOW, the tube-launched, optically tracked, wire-guided missile system developed for the US Army by Hughes, has been deployed with the air and ground forces of more than 20 nations.

Each missile was fired from a different attack angle, testing the system accuracy while hovering, ascending, descending and banking. Target ranges varied from 1,750 to 3,000 meters.

MINE LOCATOR

ISRAEL

The Beta Engineering Company of Israel is developing a new mine locator which apparently is in the series production stage. The mine detector, powered by commercial nickel cadmium batteries, is fully transistorized and weighs 1.5 kilograms (3.3 pounds).

The company's primary interest is the development and production of medical electronics, but it also has armament contracts.

SWEDEN

The Swedish firm Baracudaverken AB, Djursholm, has begun production of a new inflatable hasty footbridge for infantry. The pathway is 25 meters (81 feet) long and 1.5 meters (4.9 feet) wide and weighs about 100 kilograms (220 pounds).

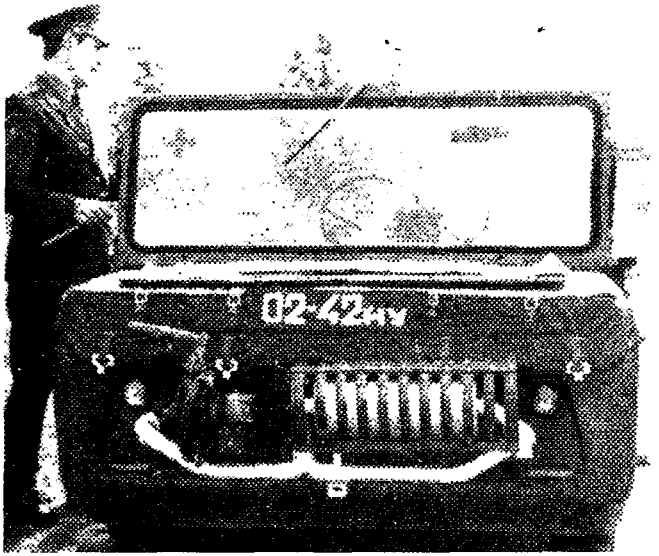
INFLATABLE FOOTBRIDGE

Its construction resembles that of an inflatable rubber life raft. Two inner tubes connected by a running mat are filled with air to produce buoyancy for the footbridge. It can be rolled out and blown up within one minute and is used primarily for fording small bodies of water.

USSR

NEW ULTRALIGHT TRANSPORT VEHICLE IDENTIFIED

The new Soviet ultralight transport vehicle first reported in October 1976 has been identified by the East Germans as the Soviet *LUAZ967M* The vehicle is produced by the Lutsk Motor Vehicle Plant.



The *LUAZ967M* is a cargo carrier but is especially designed for the medical services to use as a front-line evacuation vehicle. The driver, who sits in the center of the vehicle, can drive from the prone position, and the truck's silhouette is purposely low to allow use in combat areas It can carry two seated wounded and two litters.

The most significant characteristic of the *LUAZ* is that it is amphibious. Its swimming speed is 5 to 6 kilometers per hour, and land speed is 75 kilometers per hour —*AFSTC news item.*

MR BOOKS

Keeping the Peace

NUCLEAR WEAPONS AND WORLD POLITICS Alternatives for the Future by David C Gompert, Michael Mandelbaum, Richard L Garwin and John H Barton Appendix by Franklin C Miller 370 Pages McGraw-Hill Book Co, N Y 1977 $10 95 clothbound $6 95 paperbound

The Council on Foreign Relations, which publishes the journal *Foreign Affairs*, has initiated the production of a series of studies on international concerns for the next decade and beyond as part of their 1980s' project. *Nuclear Weapons and World Politics: Alternatives for the Future* is a part of this effort. The analyses are presented in four essays, one each by the listed authors, preceded and succeeded by short introductory and closing essays by Mr. Gompert. An appendix by Franklin C. Miller summarizing information on strategic nuclear forces in the present world, a short glossary and an index round out the volume.

Each of the alternatives is presented as a regime, a background of world politics which determines the position of nuclear weapons in international affairs. The first essay, by Michael Mandelbaum of Harvard University, presents a regime which is an extension of the present system viewed with its three-decade history and apparent trends in projected and current negotiations. Professor Mandelbaum's writing style and exposition make this the easiest of the four analyses to follow. A certain uneasy reassurance is experienced in the treatment since the author projects a fair degree of stability against nuclear conflict through the next decade and into the 1990s. Thereafter, projections from the present are very uncertain.

The second regime, presented by Richard L. Garwin of the IBM research staff, consists of a series of agreements and national policies aimed at decreasing the importance of nuclear weapons in international affairs. There are various ways this end could be accomplished, and Dr. Garwin has highlighted approaches the United States could make unilaterally toward this goal. Since a multiplicity of agreements or at least a widespread acceptance of multilateral international situations concerning nuclear arms is inherent in this regime, complexity is expected Dr. Garwin attempts to persuade that reducing dependence on nuclear weapons is more desirable than an extension of the present situation (the first regime) and more practically realizable than total proscription (the third regime). This thesis appears difficult to prove, and the complexity of the international agreements hypothesized does not assist the argument.

Professor Barton of Stanford University undertakes the examination of the third regime, a proscription of nuclear weapons. In proposing this situation, Professor Barton is well aware of

the almost insurmountable difficulties which may prevent attaining this regime. In fact, as he points out, the most credible approaches to this regime are through the forcing of a world view upon national leaders by their citizenry or a recognition by national governments that proscription is necessary to their continued existence, due to the impossibility of achieving nuclear stability. Unfortunately, the catalyst to produce the third regime may lie in an actual nuclear conflict or a narrow escape from one. Despite the improbability of realizing the third regime in the near term, recommendations are made for definite actions which will facilitate a noncatastrophic evolution to nuclear weapon proscription.

Strategic deterioration, the fourth regime, is explored by David C. Gompert, as an in-depth discussion of the instabilities which may occur in an environment like the present and the effects of these instabilities on international relations. Thus, it is an interesting counterpoint to the first regime. Actual nuclear conflict on a global scale is not discussed but, rather, the ramifications of imbalances on the conduct of international affairs.

This volume makes neither light nor cheerful reading. However, the pictures presented are not wholly grim, and the overall goal of providing analyses which point to positive steps which policymakers can support is certainly attained. As a group, the essays provide well-organized, interesting analyses of a subject which will remain central to many aspects of world politics for the foreseeable future.

Patrick Crowley,
Army Foreign Science and Technology Center

SHATTERED PEACE by Daniel Yergin 526 Pages Houghton Mifflin, Boston, Mass 1977 $15 00

As the Gotterdammerung of winter/spring 1945 engulfed Germany, *SS* Colonel Otto Gunsche remarked to Hitler, "Berlin will be most practical as our (military) headquarters: we'll soon be able to take the streetcar from the eastern to the western front." The purpose of running to ground in Berlin in the face of the advancing Allied armies was to highlight the regime's solvency and to await an inevitable disintegration of the great power coalition. Hitler's certainty of a US-Soviet confrontation was soon realized; his legacy of institutionalized superpower conflict is expertly explained in this latest analysis of the origins of the Cold War.

Shattered Peace is separated from its many predecessors in Cold War reassessment by an unusually instructive focus. The author examines the underpinning of what he calls the US "national security state" by relating the ongoing emphasis on defense priorities to the Cold War personalities and politics which have become a familiar part of American historiography.

The reasons for the early confrontation across the demarcation lines in Central Europe are far more complex, Yergin argues, than the ready picture of two rival states stumbling into the classic power vacuum that Hitler foresaw. The intellectual nutrient for US assertiveness in postwar policy had already been provided. The fears of hard-line State Department Sovietologists such as Loy Henderson and George Kennan were rooted in the Cheka's purges of the 1930s. But with the crusade against Hitler, the elusive distinctions between communism and fascism were conveniently forgotten.

The Yalta axioms that this overoptimism finally spawned unsurprisingly resulted in imprudent American accommodation of Soviet "security objectives." The consequences of such policy, in turn, led to the Truman administration's belated appreciation of the uncompromising ambitions of the wayward Soviet ally. The neglected State Department pessimists were then ready to re-emphasize their somber prewar prognoses; a compatible correlation of forces—diplomatic, military, legislative—eagerly fulfilled the need for an enhanced US defense posture.

Yergin clarifies the reasons for this preoccupation with security in US postwar policy by using three valuable approaches: incisive biographical sketches (that is, a superb one of James Forrestal), important archival discoveries and a refreshing disdain for the academic suspicion of literary style. *Shattered Peace* is not revisionist history if that is defined as one that presents as forcefully as possible the case for policies other than those pursued. Rather, the book is a dispassionate assessment of a structural change in American politics—one that necessitated expenditures for defense and international matters in 1955 that were 57 times what they had been in 1935.

As the United States questions the extent of its current world role, it is crucial to understand the motivations behind the assumption of superpower status. Berlin still stands as a focus of great power tension; the dynamics that propelled the United States and the Soviet Union into the Cold War should continue to receive such authoritative attention.

Derek Leebaert,
Harvard University

WAR Controlling Escalation by Richard Smoke 419 Pages Harvard University Press, Cambridge, Mass 1977 $18 50

Mr. Smoke begins his scholarly work with the supposition that, in the final decades of this century, wars are likely to be at least as frequent and more destructive than ever before. If that is so, a study of the dynamics and the ways to reduce escalation would seem to be of benefit The author feels that escalation is a feature, actual or possible, in all conflicts and that our belief in limited wars naturally leads to a belief in the control of escalation.

In the first three chapters of the book, Mr. Smoke discusses such things as actor-initiated and phenomenal-image escalation. He also discusses the innate upward dynamics of escalation and reciprocal versus step-by-step escalation. His discussions are very theoretical and are intended to provide the reader with the framework for the main part of the book which is a series of seven case studies of wars. The case studies range from the Seven Years' War to the Spanish Civil War and are designed to answer a series of questions concerning the dynamics of operational escalation.

Smoke does not address the nuclear aspect of escalation since he does not think it is plausible to use nuclear escalation as a strategy. The last two chapters of the book examine the case studies to see how escalation was or was not controlled. He sees in the case of uncontrolled escalation such things as preconditional analysis, deficient analysis and poor cognitive processing as helping to bring about the situation.

Smoke uses many psychological terms and discussions in his analysis. He offers well-documented conclusions and a series of operational questions for decisionmakers. He has included an extensive bibliography and very fine footnotes as well.

The book is of scholarly interest if you make your living by studying strategy or the dynamics of escalation as connected with war. Otherwise, the price of the book and its theoretical subject will be of limited interest to the general readership.

Lt Col Robert G Clarke, *USAWC*

OFFENSE AND DEFENSE IN THE INTERNATIONAL SYSTEM by George H Quester 219 Pages John Wiley & Sons, N Y 1977 $10 95 clothbound $6 95 paperbound

---

Offense and Defense in the International System was written under the auspices of the Cornell University Peace Studies Program. A book filled with historical and theoretical strategies for international relations, this presentation by Dr. Quester is time-consuming yet reasonably rewarding. The practicality for modern circumstances is questionable. Quester's approach is a step-by-step presentation of historical development of what we now call international relations. The title "Offense and Defense" implies strategic application. However, Quester provides little fulfillment here. His development of basic human relations to the complexities of a modern scientific world is deliberate and provides an excellent foundation for theoretical examinations.

Such basic ideas as the international principle of defense improving as various "state's" population increased, to the assertive balance of power concept of offensive action to preserve world political stability are interesting and educational. An obvious weakness in Quester's approach is the high "fog factor" caused by lengthy sentences and an overpowering vocabulary (example above).

The author provides an excellent analysis of World Wars I and II as relates to strategic offensive action and the external pressures applied to both sides. Stating that the principle of offensive power coupled with a human aversion to war had changed the importance of balance of power in international relations, Quester presents a valid discussion that revolves around World Wars I and II and Germany's role in both. Advanced technology and the ability to mobilize characterized the advent of World War II and offered new potentials to exploit offensive actions in large landmass warfare (proven by the invasion and capitulation of France to the Germans).

The nuclear age returned balance of power as a significant consideration in a modern world. Limited warfare, negotiation and the fear of catastrophic results of "atomic" war increased the intensity of military strategists, heads of state and the world masses to ensure that warfare would be controlled and limited. The limited war theory has resulted in a re-emphasis of the principle of defensive power as being the most advantageous. The threat of offensive action has created widely discussed arms limitations talks and arms control, yet the "race" continues.

Communications and relative military power may help to prevent offensive action—this, and the acceptance of status quo, a general satisfaction and realization that risks of war are too expensive. In terms of returns, there is a general confidence that the "threat" is dormant. In all, Quester's book is one I recommend to the historian and strategist alike.

Lt Col Stephen E Featherstone, *USA, Retired*

Problems at the Top

CRISIS IN COMMAND. Mismanagement in the Army by Richard A. Gabriel and Paul L. Savage. 242 Pages. Hill & Wang, N.Y. 1978. $10.00

This book must be read by the officer corps and its leaders. It must not be ignored, nor lightly dismissed, for it is a work of crucial importance. It is too convenient to believe that the Army has turned the corner, that it has bottomed out and is now embarked on a miraculous cure toward heightened professionalism. Indeed, it is dangerous to assert simply that Vietnam is behind us, to look forward and find new challenges, to blame the politician, the society, the permissiveness of the drug era, the media, the university for the conduct and outcome of the war in Vietnam and its attendant ills and mistakes. The military leadership, particularly the officer corps, must learn from its own experience. We must be willing to become introspective, to undergo a catharsis, in order for us to become a meaningful professional force.

What crisis in command exists? Who will admit it? If you doubt one exists, read no further, and certainly don't bother to read yet another work written by obviously disgruntled, dissatisfied former Army officers who assuredly never experienced the "real Army." If, however, you have the least doubt about the existence of problems in the Army officer corps, then read this book, reflect upon its identification of the problem, evaluate its recommended solutions and therefrom select for implementation those which are workable. In short, use this work.

Undoubtedly, this work will receive major public exposure. It is a work which is critical of today's Army and the Vietnam army. Therefore, it may be seen as a best seller by the press. Certainly, it will be boosted through a major promotional effort, it will be reviewed by major papers and magazines and it will make a big splash in the headlines. Unfortunately, this may work against Savage and Gabriel being widely read by the officer corps.

With these factors in mind, let me indicate the value of this work. The authors' purpose is in one sense extremely simple and in another exceedingly complex. Their assertion of a crisis in command is based on the common acceptance of the equation that good management is good leadership. But it is deeper than this. Over a number of years, but accelerated by Vietnam, the corporate image of management has taken over the uniqueness of Army leadership. Corporate management techniques have taken hold to such an extent that men were no longer led to their death in combat but, rather, "managed to their death." This is the crisis: There was no leadership in command in combat—management took over—even at the small unit level.

Has the Army recovered? The authors convincingly argue that we have not. They assert that, until we admit that there is a central problem, no bottom will have been reached to enable us to climb upward.

What are the authors' recommendations? In the forefront is the obvious: introspectively recognize there is a problem and, secondly, recognize that the officer corps—at every level—must be in the vanguard of reform. Several suggestions are presented to help the officer corps transform itself: an autonomous inspector general, an officer's code, a board of honor, discontinuance of the staggering officer rotations, change of the mandatory-up or out concept of officer career development—encouragement of professional company commanders—and, lastly, a cut in the number of *generals* by 200.

Most significantly, they recommend building unit cohesiveness through unit-level training under officers and noncommissioned officers remaining with that unit for an appreciable

time. In other words, abandon the concept of centralized training, of individual replacement and rotation. Furthermore, the authors feel that, with unit cohesiveness realized through professional officers, training their units for service, rotation of these units—minus dependents—to Europe and other overseas areas on a *Reforger* concept could result in significant cuts in travel costs. Unit training would go hand in hand with unit rotation. Because this experience would be so beneficial, recruitment difficulties for both officer and enlisted personnel would be decreased.

These suggestions—capsulized as they are—demonstrate that the authors are critical but constructive. They seek not to tear an institutional house down without using the bricks at hand for a reconstruction effort.

At the risk of overemphasis, I recommend this work, knowing it will cause pain and anguish, but assured that it seeks reform leading to a better Army.

Maj Michael D Krause,
Office of the Joint Chiefs of Staff

CORPS COMMANDER by Sir Brian Horrocks with Eversley Belfield and Major General H Essame 256 Pages Scribner's, N Y 1977 $14 95

Lieutenant General Sir Brian Horrocks of the British army has written an unusual memoir of his experiences as a corps commander in World War II. Although corps commanders as a group have not been prolific writers, it is precisely this level of command that is involved with battlefield leadership and tactics. This is General Horrocks' personal account of his "trials, tribulations and very occasional triumphs."

A combat veteran of both World War I and World War II, General Horrocks is extraordinarily forthright. There are some revealing insights on personalities such as: Montgomery "might be tactless and difficult . . . but he was a great Commander in the field. . . ." Eisenhower: Was he a great commander? "In the strictly military sense the answer must be No . . . but he was a superb co-ordinator of Allied armies. . . ."

On the question of "interoperability" (getting along), General Horrocks criticizes the American corps and division commanders for not visiting the troops in combat, but he admires the American system for on-the-spot awards and decorations.

Although General Horrocks commanded the British XXX Corps and was thus responsible for the ground linkup at Arnhem, the reader will search in vain for a precise explanation of the failure of the armored elements to link up with the British airborne troops (if one exists). We know that "stubborn German resistance" and "logistical difficulties" delayed the advance. But neither the plan nor the concept, nor indeed the fighting courage of the British armored troops, is questioned. The enigma remains.

In short, General Horrocks and his collaborators have produced a concise, well-written summary of the command and operational problems of a corps commander. His book deserves to be read by the serious military practitioner and the military historian alike. Technology rushes on, but the battlefield imperatives, the problems faced by the leaders and the led, remain largely unchanged.

Gen Theodore J Conway, *USA Retired*

NEW BOOKS RECEIVED

AN INVENTORY OF FEDERAL INCOME TRANSFER PROGRAMS: Fiscal Year 1977 by William J Lawrence and Stephen Leeds Foreword by Leonard M Greene 219 Pages Institute for Socioeconomic Studies, White Plains, N Y 1978 $12 00

ALLIES OF A KIND. The United States, Britain, and the War Against Japan, 1941-1945 by Christopher Throne 772 Pages Oxford University Press, N Y 1978 $29 50

THE ART OF WARFARE IN WESTERN EUROPE DURING THE MIDDLE AGES From the Eighth Century to 1340 by J F Verbruggen Translated by Sumner Willard and S C M Southern 321 Pages North Holland Publishing Co., N Y 1977 $36 95

THE ART DF WARFARE IN THE AGE OF NAPOLEON by Gunther E Rothenberg 272 Pages Indiana University Press, Bloomington, Ind 1978 $12 50

BIBLIOGRAPHIC GUIDE TO THE TWO WORLD WARS: An Annotated Survey of English-Language Reference Materials by Gwyn M Bayliss 578 Pages R R Bowker Co., Ann Arbor, Mich 1977 $30 00

BRIDGE ACROSS THE SKY The Berlin Blockade and Airlift 1948-1949 by Richard Collier 239 Pages McGraw Hill Book Co., N Y 1978 $12 95

A BRITTLE SWORD The Kentucky Militia, 1776-1912 by Richard G Stone Jr 127 Pages University Press of Kentucky Lexington, Ky. 1977 $4 95

THE BUFFALO HUNTERS by Mari Sandoz 372 Pages University of Nebraska Press, Lincoln Neb 1978 $4 50

A CAPTIVE OF TIME by Olga Ivinskaya 504 Pages Doubleday & Co., N Y 1978 $12 50

CHERRYWOOD CANNON by Ralph Steadman Paddington Press, N Y 1978 $7 95

CHINA An Analytical Survey of Literature, 1978 Edition DA Pamphlet 550-9-1 232 Pages Department of the Army, Washington, D C

CHINA WATCH Toward Sino-American Reconciliation by Robert G Sutter Foreword by Allen S Whiting 155 Pages Johns Hopkins University Press Baltimore Md 1978 $10 95

CITY OF FIRE Los Alamos and the Birth of the Atomic Age 1943-1945 by James W Kunetka 234 Pages Prentice Hall Inc., Englewood Cliffs N J 1978 $10 95

COMMAND DECISION AND THE PRESIDENCY A Study of National Security Policy and Organization by R Gordon Hoxie Foreword by President Gerald R Ford 503 Pages Reader's Digest Press, N Y 1977 $15 00

THE COMPLETE GUIDE TO HUNTING by Arthur L Cone Jr 335 Pages Stoeger Publishing Co., South Hackensack, N J 1970 $5 95

CRITICAL CONVOY BATTLES OF MARCH 1943 by Jurgen Rohwer 256 Pages US Naval Institute Press Annapolis Md 1977 $12 95

DE CRISTOFORO'S HOUSEBUILDING ILLUSTRATED by R J De Cristoforo 644 Pages Harper & Row, N Y 1978 $14 95

DO-IT-YOURSELF CONTRACTING TO BUILD YOUR OWN HOME by Richard Stillman 179 Pages Chilton Book Co., Radnor, Pa 1978 $6 95

DROPSHOT The United States Plan for War With the Soviet Union in 1957 Edited by Anthony Cave Brown 330 Pages Dial Press, N Y 1978 $11 95

DUST TO DUST Compiled by Jerry J Gaddy Illustrations by Dale Crawford 160 Pages Old Army Press Fort Collins, Colo 1977 $11 95

THE FAR EAST AND AUSTRALASIA. 1977-78. A Survey and Directory of Asia and the Pacific 1,251 Pages Gale Research Co., Detroit, Mich 1977 $66 00

THE LEWIS AND CLARK TRAIL by Archie Satterfield Illustrated by Marilyn Weber 224 Pages Stackpole Books, Harrisburg, Pa 1978 $8 95

WE THE WOMEN by Madeleine B Stern 403 Pages Burt Franklin & Co., N Y 1977 $7 95 paperbound

THE ZEPPELIN STORY by W Robert Nitske 191 Pages A S Barnes & Co., Cranbury, N J 1977 $17 50

THE FIRST AND THE LAST: The Rise and Fall of the German Fighter Forces, 1938-1945 by Adolf Galland Translated by Mervyn Savill 302 Pages Bantam Books, N Y 1978 $1 95

FIRE ON THE MOUNTAIN by Edward Abbey Introduction by Gerald Haslam 211 Pages University of New Mexico Press, Albuquerque, N M 1978 $3 95 paperbound

THE F-4 PHANTOM II AND THE UNITED STATES SIXTH FLEET IN THE MEDITERRANEAN SEA by Franz-Josef Giehl 218 Pages Vantage Press, N Y 1976 $7 50

FLY FOR YOUR LIFE by Larry Forrester 368 Pages Bantam Books, N Y 1978 $1 95

FROM APES TO WARLORDS by Solly Zuckerman 447 Pages Harper & Row, N Y 1978 $20 95

FROM JUNE TO OCTOBER The Middle East Between 1967 and 1973. Edited by Itamar Rabinovich and Haim Shaked. 417 Pages. Transaction Books, New Brunswick, N J 1978 $19 95

GLITTERING MISERY· Dependents of the Indian Fighting Army by Patricia Stallard 159 Pages Old Army Press, Fort Collins, Colo 1978 $10 95

GOING AFTER CACCIATO by Tim O'Brien 338 Pages Delacorte Press/Seymour Lawrence, N Y 1978 $8 95

THE GREAT WAR. 1914-1918. A Pictorial History by John Terraine 400 Pages Doubleday & Co., N Y 1978 $10 00

GROWTH OF GOVERNMENT IN THE WEST by G Warren Nutter 94 Pages American Enterprise Institute for Public Policy Research, Washington, D C 1978 $2 75

GUIDE TO THE SOVIET NAVY by Siegfried Breyer and Norman Polmar 610 Pages US Naval Institute Press, Annapolis, Md 1977 $22 95

HARNESSING WATER POWER FOR HOME ENERGY by Dermont McGuigan 101 Pages Garden Way Publishing, Charlotte, Vt 1978 $9 95 clothbound $4 95 paperbound

HARNESSING THE WIND FOR HOME ENERGY by Dermont McGuigan. 134 Pages. Garden Way Publishing, Charlotte, Vt 1978 $9 95 clothbound $4 95 paperbound.

A HISTORY OF FIREARMS by Major Hugh Bertie Campbell Pollard 320 Pages Burt Franklin & Co., N Y 1977 $8 95

A HISTORY OF RHODESIA by Robert Blake 435 Pages Alfred A Knopf, N Y 1977 $15 00

A HISTORY OF WAR AT SEA. An Atlas and Chronology of Conflict at Sea From Earliest Times to the Present by Helmut Pemsel Translated by Major G D G Smith 176 Pages US Naval Institute Press, Annapolis, Md 1977 $15 95

HUNTING DOGS by F Philip Rice and John J Dahl 200 Pages Funk & Wagnalls, N Y 1978 $7 95 clothbound $4 95 paperbound

THE HOME FRONT U S A by Ronald H Bailey and the Editors of Time-Life Books 208 Pages Time-Life Books, Alexandria, Va 1977 $9 95

HOW LONG WILL SOUTH AFRICA SURVIVE? by R W Johnson Oxford University Press, N Y 1977 $15 95 clothbound $8 95 paperbound

INTELLIGENCE, ESPIONAGE, COUNTERESPIONAGE, AND COVERT OPERATIONS A Guide to Information Sources. Edited by Paul W Blackstock and Colonel Frank L Schaf Jr. Retired 256 Pages Gale Research Co., Detroit, Mich 1978 $18 00

JAPANESE ARMY FIGHTERS. Part 2 by William Green and Gordon Swanborough 68 Pages Arco Publishing Co., N Y 1978 $4 95

JAPAN'S PUBLIC POLICY COMPANIES by Chalmers Johnson 173 Pages American Enterprise Institute for Public Policy Research, Washington, D C 1978 $3 75

THE KAISER Warlord of the Second Reich by Alan Palmer 276 Pages Scribner's N Y 1978 $14 95

KOREAN PHOENIX. A Nation From the Ashes by Michael Keon 234 Pages Prentice Hall, Englewood Cliffs, N J 1977

A KENNEL OF DOGS Edited by Clifford L B Hubbard 160 Pages Paul Elek, Inc., Salem, N H 1977 $10 95

L C. SMITH SHOTGUNS by William S Brophy 244 Pages Beinfeld Publishing, Inc., N Hollywood, Calif 1977 $24 95

U S Government Printing Office 1978 - 765-178 11