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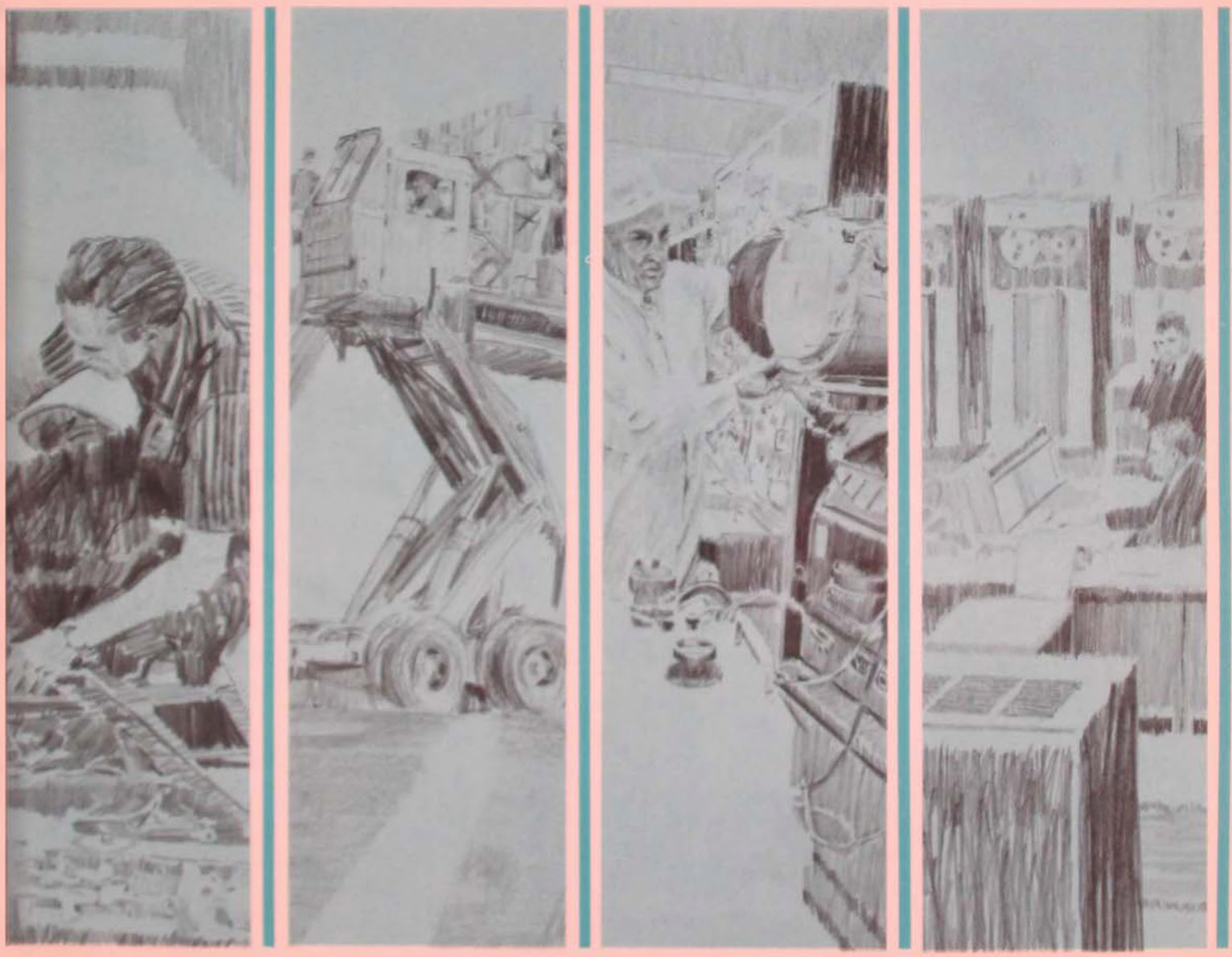

LOGISTICS IS THE LIFELINE . . . CANADIAN MILITARY REORGANIZATION . . . ROYAL AIR FORCE IN RETROSPECT

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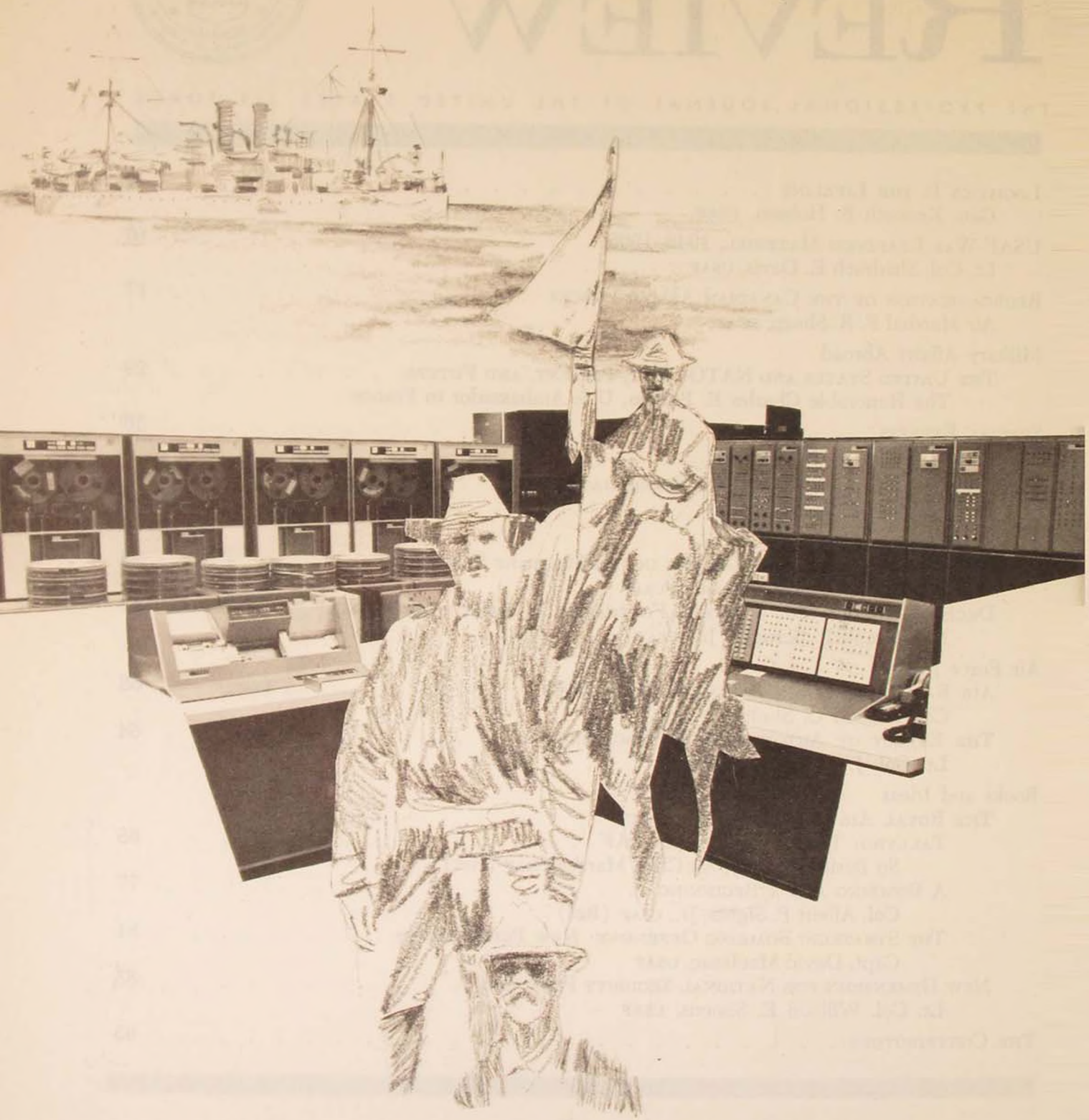
the cover

Several faces of the role that the Air Force Logistics Command is playing in support of the Vietnam effort are reflected on our cover. The contents of this issue delve even more deeply into the varied role of AFLC: General Kenneth B. Hobson's "Logistics Is the Lifeline," Lt. Col. Shadrach E. Davis's "USAF War Readiness Materiel, 1946–1966," and Lt. Col. Ruskin M. Bland's "Special Express."



LOGISTICS IS THE LIFELINE

General Kenneth B. Hobson

THROUGHOUT HISTORY, the armed forces of all nations have done an unsatisfactory logistics job. Commanders have always complained that they did not have what they needed at the right place at the right time. It was always a case of "too little and too late."

One of the most glaring historical examples of a logistics mess occurred during the Spanish-American War. After 33 years of peace, the War Department was suddenly confronted with the task of supporting and supplying a force of 250,000 men, about ten times the size of the peacetime army. The area around Tampa, Florida, embarkation point for the expeditionary force for Cuba, was a scene of fantastic disorder and confusion.

Lack of planning by the War Department was at the root of the trouble; in fact national policy forbade the making of specific war plans. No decisions were made on the nature of the mission of an expeditionary force, and there was no determination as to the size of the force needed. The actual procedure was to see how many troops, ships, and supplies could be congregated at Tampa and then decide what to do with them.

The expeditionary force was sent to tropical Cuba clothed in heavy woolen winter uniforms. Lightweight uniforms did not arrive until after the Cuban phase of the war was over. And when the time came to embark for Cuba, it was found that the transport ships assembled for the purpose could carry only 17,000 of the 25,000 men who were waiting to go.

At one point, the commanding general of the expeditionary force sent a message to Washington recommending that the manufacture of Springfield rifles be discontinued. He was informed that the manufacture of these rifles had been discontinued five years before.

Conditions were so bad that Theodore Roosevelt, an active participant in the conflict, was moved to comment, "There is no head, no management whatever in the War Department. Against a good nation we should be helpless."

The Spanish-American War marked a turning point in management within the American Army, and from this point of view the poor administration of the war was of great benefit. Criticisms leveled at military management led to improved conditions at the beginning of the twentieth century.

It is perhaps unfair to contrast the logistics performance during the Spanish-American War with the buildup in Southeast Asia during the last two years. Today we have the advantage of many years of experience, including three intervening major wars fought overseas, as well as the benefit of tremendous advances in technology and management techniques.

It must be remembered, however, that the forces and weapon systems we are dealing with in 1967 are much larger and infinitely more complex and sophisticated than those of 1898. And it is also worth noting that while we effectively maintain large combat forces 10,000 miles from home in Southeast Asia, there is no lessening of support to our Air Force units on the defense perimeters elsewhere in the Pacific, in Europe, and at home.

There can be no doubt that the expanded flow of men, supplies, and equipment to South Vietnam beginning in the spring of 1965 has been the key to continued existence of South Vietnam as a nation and has frustrated the political and military objectives of the Viet Cong and North Vietnam. While the performance of all U.S. military forces in the theater has been magnificent, success still falls to the side that has mastered logistics.

In this connection I would like to quote two passages from a speech by General Earle G. Wheeler, Chairman of the Joint Chiefs of Staff, after he returned from a tour of Vietnam in January 1967:

> Almost incredibly, the United States moved nearly 200,000 men and almost two and a half million tons of supplies and equipment over thousands of miles to Southeast Asia between July and October 1965. This alone, in my judgment, was a magnificent feat of arms. No other nation could have achieved it.

After describing the difficulties in raising, training, equipping, and organizing the forces, General Wheeler went on to say:

> Perhaps even harder tasks were involved in moving them in and preparing logistically for

> their employment. It was as if one were to move a major American city some 10,000 miles, place it in a radically new environment, and expect that every aspect of its existence—public and private—would be provided for without delay or confusion, and in the face of dangers and difficulties such as its citizens had never confronted before.

It would be too much to describe fully the evolution of Air Force logistics support in Southeast Asia, all problems that we encountered, and the solutions that we applied. But I should touch a few of the highlights.

The war in Southeast Asia provided the first live test of the effectiveness of our modern logistics system and brought out defects that had to be corrected. Probably the greatest single cause of the problems we encountered in the early stages was that theories conceived in peacetime were not based on any realistic tests of the logistics system and did not conform to the realities of the Vietnam conflict. The system had been geared more to the support of short-term deployments than to the support of prolonged limited war. Supporting a prolonged conflict on the other side of the world is a far cry from supporting a unit on brief maneuvers a relatively short distance from its home base. We had to react to many of our problems in Vietnam on a case-by-case basis. There was an obvious need for the total logistics system to evolve further in order routinely to avoid many problems and solve those we could not avoid.

By way of background, in 1961 the Air Force deployed a limited number of aircraft in Vietnam. These planes were deployed with flyaway kits containing spare parts to support a 30-day sustained mission. There was no logistics support base of any size in Vietnam at that time.

With the buildup of U.S. support to the Vietnam Air Force early in 1962, the Pacific Air Forces decided to establish a base supply at Tan Son Nhut. It was supported directly from the continental United States, surface transportation being the basic means of resupply. Many problems were encountered, including storage, environmental conditions, and responsive communications.

As operations continued to accelerate, new procedures were adopted to improve depot supply support. One such step was the establishment of Weapon System Control Points. For each aircraft model in Southeast Asia, an Air Materiel Area in the United States was designated as the control point. Each control point receives requisitions, performs necessary research, selects the proper source, maintains follow-up, and expedites delivery of the materiel to the requesting activity. Faraway units in the field must be relieved of as many logistics details as possible, and this close monitoring action gives them a "home" they can depend upon for support.

The success of this procedure for weapon systems led to a similar concept for commodities. Thirteen Commodity Control Points were established at the Air Materiel Areas, to receive requisitions from Southeast Asia bases for such items as parts for vehicles, photo equipment, and ground generators. The need for such a system became evident early in 1965 when we found that such ground equipment as tugs, runway sweepers, and bomb lifts were deadlined for parts.

Realizing that overseas combat operations generate peak workloads beyond the capabilities of the operating forces, the Air Force Logistics Command responded to the needs by providing special skills and extra effort in the maintenance, supply, procurement, and transportation areas.

One form of this assistance involves the use of AFLC's Rapid Area Maintenance (RAM) teams. In order to free tactical unit personnel to carry on standard maintenance, engineers and maintenance specialists who are members of the RAM force expedite removal and recovery of crashed and battle-damaged aircraft. They make on-site repairs or put planes into condition for a one-time flight to Air Force or contractor facilities for repair. They also assist the bases in such work as aircraft and jet engine maintenance and modification.

The effectiveness of RAM team members was attested in a letter I received late last year

from Lieutenant General William W. Momyer, Commander of the Seventh Air Force (PACAF):

> Your people did a terrific job following the attack on Tan Son Nhut. As you know, we had some fifteen aircraft damaged in some degree. Except for two CH-3 helicopters and an RF-4C, every one of these damaged aircraft was back in the air in less than a week. Parts held up the chopper and RF-4C or they would have been in the air also. Your people worked around the clock, and I am very appreciative of the way they have played on the combat team.

We also have Rapid Area Supply Support (RASS) teams to help in processing the large volume of materiel received in the Southeast Asia theater. These supply experts move into newly established bases where permanent personnel have not arrived in force, or they augment rear-echelon bases where the buildup of supplies and equipment has exceeded base capability. Their purpose is to assist bases in establishing accounting, inventory, storage, and issue activities.

Our Rapid Area Transportation Support (RATS) teams in Vietnam have carried out such functions as processing backlogged priority cargo and providing on-the-job training for Vietnamese civilians to take over the work.

In the early stages another highly successful innovation was the "Special Express" system for airmunitions. It was developed to provide a fast, even flow of munitions directly from the West Coast of the United States to Southeast Asia. Originally it was a five-ship shuttle system; it has since been substantially expanded. The ships were loaded like retail stores, carrying various types of munitions, each in its own temperature-controlled section of the hold. Arriving in the combat zone, they anchored offshore to become floating munitions warehouses. As required, lighters (shore-based offloading vessels) pulled alongside the Special Express ships, and the munitions were loaded directly into mobile weapons transporters that had been prepositioned aboard the lighter. Once back on shore, tractor trucks hauled the loaded transporters directly to the using units.

Along with the increase in air activity in Southeast Asia, there was an increased requirement for support bases. To overcome the problem of inadequate or nonexistent facilities, there has been a rapid expansion of existing bases and fast construction of new ones. Originally, it had been estimated that the expansion would cover four new bases and two or three

established bases. The expansion program has since grown to 21 bases, with new ones being literally hacked out of the jungle or—as with Cam Rahn Bay—built on a pile of sand.

It was obvious that PACAF's limited logistics forces would need assistance in bringing these bases to operational status. Therefore we organized the Logistics Activation Task Force (LATAF), with the top-priority mission of insuring orderly and timely logistics actions to the expanding base program. Located in the command post of Headquarters AFLC at Wright-Patterson Air Force Base, Ohio, LATAF is composed of experienced logistics specialists drawn from the functional staff agencies. Their job is to monitor and assist in the equipping of newly constructed bare bases in order that proper facilities will be prepared in advance of the arrival of assigned tactical units. In this way the time lag between deployment of a combat unit and its operational readiness within the theater is held to the minimum or eliminated altogether. Also the combat unit is assured that its weapon systems will have equipment needed to stay at peak efficiency.

Actually, the LATAF performs the functions of determining what is needed, the requisitioning and timing of delivery of supplies and equipment, and other responsibilities that would normally fall to the base logistics staff

if one existed. It coordinates closely with units already in place to expedite delivery of supplies and materials. Any or all of the 25,000 to 40,000 line items normally stocked at an Air Force base could be required at each of the 21 Southeast Asia bases. At a new base, the materiel involved can cover 25,000 line items, 950,000 units, 7000 measurement tons, and 4 million pounds of material. In addition to our efforts in the zone of interior, a LATAF project officer is assigned to each major base during the phase-in of equipment, to check on shipment of items and assist in the establishment of records.

AFLC has a project known as "Bitter Wine," which is probably the largest single Air Force logistics effort since the Korean conflict. To date, over 29 million units, 339,000 line items and 124 million pounds of material—all vitally needed—have been moved to Southeast Asia by Bitter Wine. Under an entirely new concept, related items are grouped together and whole units shipped in their entirety, replacing the old system of requisitioning individual items. One package may contain equipment necessary for an entire machine shop, a jet engine facility, or a complete base laundry. Bitter Wine includes not only the whole range of material needed to make the bases operational as far as weapon systems are concerned but also the "behind the line" support.

Bitter Wine assets for the two most recent Southeast Asia bases have been shipped as "unit moves." This means that all assets destined for a base are assembled and loaded on one ship, thus providing a maximum of material in a minimum of time. Each shipment consists of approximately 6500 measurement tons. During the last year the fill rate for all Bitter Wine bases was increased to 90 percent. This increase was made possible by system mechanization and development of new procedures for processing Air Force supply directives.

THE FOREGOING are a few of the logistics innovations that have been peculiar to the war in Vietnam. But more important to the efficient and effective support of all Air Force weapon systems than innovations adapted to meet a temporary requirement have been the fundamental changes in management of all Air Force resources, particularly the management of our financial resources.

During the early part of this decade, budgets were requested and approved for amounts that might require as much as two or two and a half years to obligate. Some procurement quantities were scheduled for delivery as far as two or three years into the future. We had substantial carry-over of unused funds from one fiscal year to the next. The Department of Defense and the Congress looked upon these practices with increasing disfavor, with the result that in FY 1964 funds in one particular appropriation were so drastically reduced as to force a dramatic change in our management concepts, policies, and systems.

A number of improvement actions followed: we established financial goals to measure program accomplishment; we elevated requirements reviews and procurement programs to top management levels; we indoctrinated all levels of management as to industry's capacity to produce supplies and services; and we inaugurated the practice of financing only those portions of our needs that, in fact, required financing at that particular time. AFLC adjusted quickly to the policy of treating its available financing essentially as an annual appropriation, instead of the previous concept of continuing appropriations.

When escalation of the war began in the fall of 1964, we were on an extremely austere peacetime budget. It was necessary to look at our ballooning requirements in three increments: those that could be managed within available funds; those buys that would have to be deferred until a supplemental appropriation could be expected; and those buys that could be deferred until the first of the following fiscal year.

Obviously, major innovations had to be made in our methodology of computing requirements and in the methods and techniques of procurement. As with our RAM, RASS, and RATS teams, it is to the everlasting credit of our weapon systems managers, item managers, and

procurement personnel that they could accommodate to these major changes while concurrently supporting the escalating requirements, most of which were past the "lead-time away" need dates.

We have met the challenge to our logistic systems and have assured responsive support. We are now examining our policies to insure that the cessation of hostilities will not find us faced with the large stockpiles that existed after all prior conflicts. Even with a sudden ending of hostilities, under our current procurement practices stock levels will be so lean that production by industry will have to continue substantially into the future, although on a decreasing scale. Thus we hope to avoid sudden terminations and great shocks to the economy.

In essence, this basic philosophy also applies to labor. We have avoided increasing the work force in our air materiel areas substantially above the pre-Vietnam level. We wanted to avoid a rapid buildup which, with the ending of hostilities, would cause a surplus labor position and immediate comparable reduction in force and all that it implies.

How, then, are we meeting the greatly increased demand for repair of aircraft components? For a number of years the Air Force has used contract maintenance for approximately 50 percent of its requirement. As our requirements have increased, we have moved a greater proportion of work to industry, which has great capacity and flexibility. As a matter of policy, we have tried to move production-line type of work to industry and do a greater proportion of "job lot" work organically. I am convinced that this policy has resulted in flexible, responsive, and economical support.

Modern communications, electronic data-processing equipment, and rapid transportation are essential to the techniques used for improving financial management. As one example, their availability made it possible for us to concentrate management attention on capital equipment, which is subject to depot overhaul and is the most expensive segment of our inventory. The objective is to retrieve these reparable carcasses from the customer quickly, bringing them into the hands of the logistics service to be overhauled, turned around, and reissued. Minimizing the turnaround time reduces the number of spare end items in the inventory. Akin to these expensive end items, numbering some 77,000 line items with a value of $5.5 billion, are the bits and pieces needed to overhaul them.

We developed a system to recalculate our overhaul requirements on a biweekly basis, which generates the need to recover serviceable carcasses and also procurement actions to acquire bits and pieces. We call this program MISTR, for Management of Items Subject to Repair. Formerly we accomplished annual overhaul production schedules for both organic and contract maintenance, updating quarterly.

TURNING now to an overall view of logistics, I believe it can be said that, in comparison with support provided during past conflicts in our lifetime, today's logistics system is lean, fast, and flexible. It has successfully met the challenge of Vietnam without lessening support elsewhere.

Throughout recent history of modern armed forces it has been necessary to position large supply depots and repair facilities as close to the operational units as the tactical situation allowed. Hence, during World War II, for example, supply and repair depots were positioned in Great Britain and moved onto the Continent only after a substantial beachhead had been established.

In recent years, for both economy and efficiency, we have closed all our overseas depots, and for the first time we are operating in combat with logistics support direct from the United States. This is not to say that we do not perform depot-level maintenance overseas, for we package repair and modification kits and furnish people and tools for specific jobs that can be performed on the tactical air bases. But the conventional overseas depot is no longer needed. Operating in this manner is possible because of remarkable improvements and technical advances in three areas: communications, electronic data processing, and rapid air transportation.

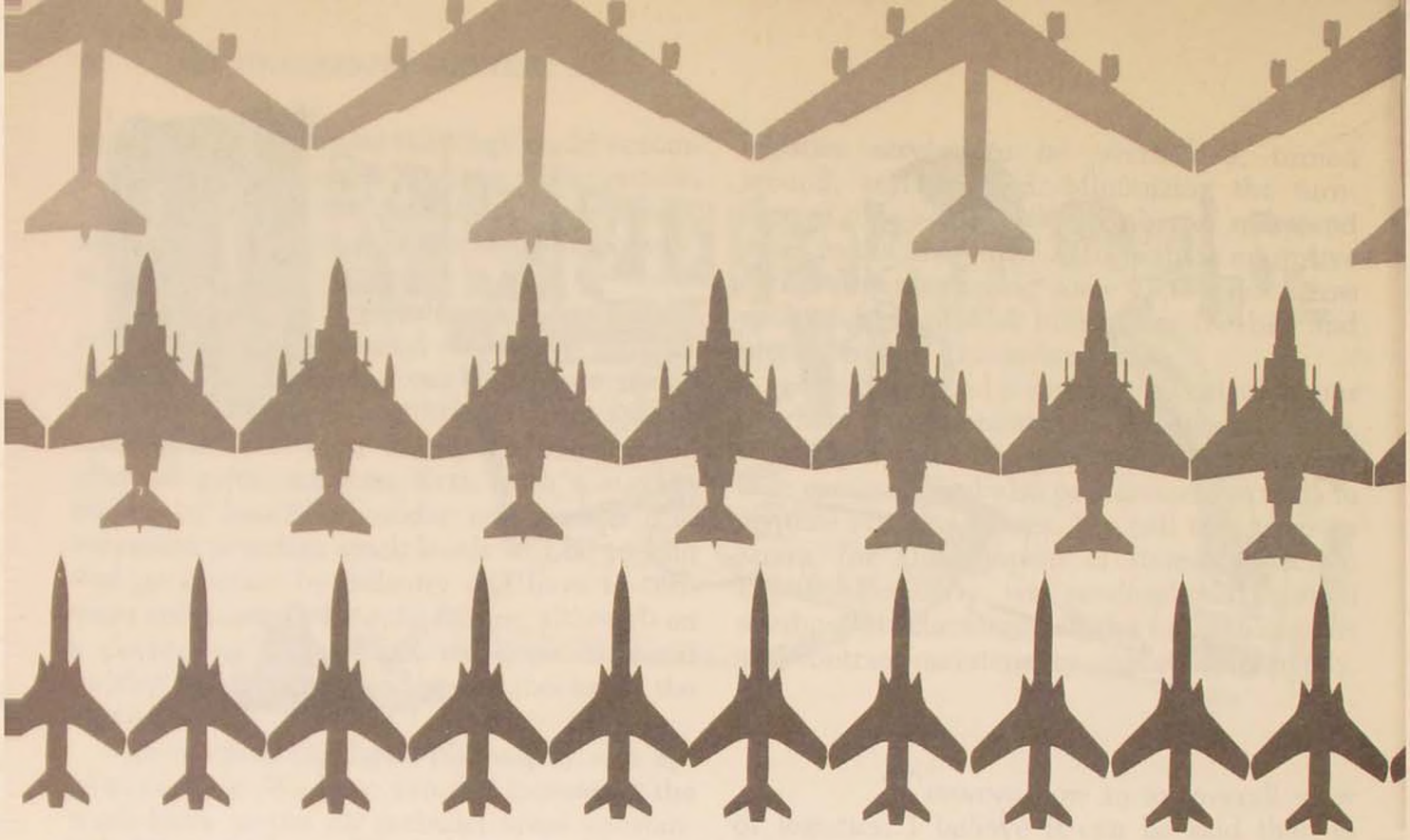
Fast communication with units to be supported is essential. We have advanced from a manual supply requisition system, which responded no faster than the speed of mail service, to a teletype system, and presently to the AUTODIN system, which connects major bases with supply depots through automatic switching centers. Although AUTODIN can communicate worldwide supply demands within minutes, there are still inadequacies in the system caused by periods of technical difficulty and priority sharing with other communications requirements. The next step forward, in my opinion, must be a satellite communications system dedicated to logistics. This would be considerably less expensive and far more effective than AUTODIN.

Combined with improved communications has been the widespread use of computer technology. Computers allow us to process demands in hours instead of days, maintain better control of our assets, forecast inventory requirements, and do myriad other logistics chores that once required time-consuming and less-effective manual computations.

The third major improvement in logistics support has been in air transportation. For moving high-cost items, air has long proven to be the most economical form of transportation and provides the fastest response to requirements. Compare the 20-hour flights by C-141 from the East Coast to Vietnam with the grueling 45-hour trans-Pacific flights of C-54s and C-97s during the Korean War. The introduction of the C-5 transport will offer air transportation in still another dimension. Not only will we have an improved capability for deployment of large forces and for truly massive airlift and resupply, but the reduced cost per ton-mile realized by these transports will put them in direct competition with other forms of transportation. Cargo that once was considered air-eligible only for emergency needs will become air-eligible purely from the standpoint of economics.

Putting these factors of rapid communications, automatic data processing, and rapid air transportation together with continuing management improvements, we can see that we have many opportunities for still greater improvements in Air Force logistics. In the years to come the complexity of supporting Air Force weapon systems will not diminish, but perfection will always be the goal we strive for.

Hq Air Force Logistics Command



USAF WAR READINESS MATERIEL, 1946–1966

LIEUTENANT COLONEL SHADRACH E. DAVIS

WAR readiness materiel—war reserve materiel—prepositioned stocks—gross mobilization requirements—prestockage objectives—all these terms are used frequently, and quite often indiscriminately, in reference to equipment and supplies which are procured and stored in anticipation of a need to support a military conflict. The need for prepositioning war materiel in support of armed conflict has been recognized throughout the history of military preparation.

In July 1946 Lieutenant General LeRoy Lutes, Director of Service Supply and Procurement, wrote on the subject of plans for deployment of the general reserve units: ". . . the bulk of supply and equipment, including 30 days maintenance, will be earmarked, packed, force marked and stored in task force priority arrangement in depots near the port of embarkation." The basic concept of war readiness materiel has remained substantially the same over the past twenty years.

Very little can be found concerning any concrete development of USAF war reserves or war readiness materiel (WRM) implementing directives until 1950. Then, as a result of experience gained in the Berlin airlift, it be-

came apparent that more definite control and positive direction should be established for USAF reserve materiel to support known and anticipated combat operations. A Department of the Air Force letter, 16 April 1951, entitled "Prestocking of Equipment and Supplies" (known as Project AF-GEN-1-50-OPR), appears to be the first indication of a USAF single directive governing the preassembling and storage of equipment and supplies, other than petroleum products, ammunition, and subsistence, to support USAF war plans.

The main theme of the early fifties was "short war," the retaliatory strategic concept. The primary emphasis was to provide the Strategic Air Command (SAC) with prepackaged, air-transportable, instantaneously deployable materiel to support what was believed to be the maximum length of hostilities that would occur—30, 60, or 90 days or, at the most, 180 days of general war.

The SAC Mobility Plan was completed in 1950 and 1951, and it contained a number of terms not previously used, such as flyaway kit, unit essential equipment, and readiness reserve. It was about this same time that the station set was established, originally designed to support a combat unit at a forward operating base for 90 days under austere conditions. The station set equipment did not include aircraft or electronic spares but did include flight-line maintenance support for various shops—airframe, electric, instrument, hydraulic, paint, dope and fabric, parachute, woodworking, and engine repair.

Experience in conducting rotational maneuvers and operating from the flyaway kit and station set produced a requirement for the housekeeping set to provide support "behind the flight line," i.e., for equipment necessary to provide a specific number of men with sleeping, messing, and general administrative facilities. Originally established in 500-man increments, the housekeeping set concept has gradually evolved to a tailored concept to support a specific number of personnel at any particular operating location.

Air Force Regulation 67-44, published for the first time in 1956, contained the term "prepositioning" as well as "prestocking." AFR 67-44 established Chapter 14, Volume I, Part I, Air Force Manual 67-1, as the governing directive for implementation of war readiness materiel reporting procedures, and so it remains today.

It was not until the late fifties that the USAF gradually changed its policy of support of operational requirements and general attitude toward preparation for limited war. As General Thomas D. White, Chief of Staff, said in 1960: "The Air Force must have a sound, well conceived program for forces which can contribute to a limited war of any magnitude. . . . It will not suffice to say that we are well prepared for limited war because we have nuclear weapons in quantity." This change in USAF operational concept intensified concentration on the adequacy of the Air Force logistic support program. Recognition of the necessity of supporting limited wars and contingency plans precipitated the necessity to locate war readiness materiel at or near the point of planned use. The increase of contingency operations, as now in Vietnam, brings more acutely into focus the need for war readiness materiel to be properly distributed to reduce reaction time. Without this preplanned and prepositioned materiel, support of the Vietnam type of conflict would be much more difficult.

WRM management, 1966

The categories of materiel included in war readiness materiel, the quantity of line items stored, and the complexity of the weapon systems supported have changed tremendously over the past twenty years, but the definition and concept for use have remained relatively static.

The Joint Chiefs of Staff (JCS) is the focal point for all joint military planning. Hq USAF representatives participate in the preparation of all JCS plans and are guided by Air Force publications to ensure that the Air Force view is included in the Department of Defense and JCS guidance to all service action officers.

One planning document, known as the USAF Wartime Guidance Document (Short

Title: WC), is of primary importance to logistics planners. This planning guidance document is designed to provide the USAF with a single source of current policies, doctrines, and guidance concerning the conduct and support of all levels of conflict. It translates the joint guidance into basic guidance for the Air Staff, major air commands, and comparable organizations. It contains various annexes, which provide detailed guidance in specific functional areas and associated operations. Several of these, because of their volume and purpose, are published and distributed separately.

Annex X to the WC, known as the USAF Wartime Requirements Document (Short Title: WR), is of primary importance to materiel planners. The WR contains the quantitative, time-sensitive data necessary to fulfill USAF war planning responsibilities through the five-year program period. The WR reflects the Air Force position on wartime deployment of forces by type of equipment; it establishes the Hq USAF and major command coordinated position on operational use of bases in wartime; and it contains the Air Force planning factors for expenditure of war consumables. As such it provides the basis for the development of logistic support objectives, documents, and actions. One of the most important of these documents is the War Consumables Distribution Objective (WCDO), prepared by the Air Force Logistics Command. It shows quantitative WRM objectives for war consumables by base for all bases worldwide and is the basis for prepositioning of WRM assets.

The projected wartime logistic objectives and requirements must, in turn, be supported in the programming/budgeting process. The Annual Logistics Guidance of the Secretary of Defense to the military departments sets the general parameters upon which to base requirements computations and budget submissions, sometimes called acquisition objectives. The follow-on to the Secretary of Defense Annual Logistics Guidance is the issuance, usually in December or January, of the annual USAF "Buy/Budget" letter, which outlines more specifically the USAF wartime logistic support objectives and stockage policy.

We presently consider six separate categories of USAF materiel as war readiness materiel:

(a) *War consumables.* These are consumable or expendable items directly related to and necessary for the support of a wartime or combat mission; they are often regarded as the complete spectrum of WRM. There are presently approximately 200 line items of war consumables that are rigidly controlled by USAF. These items are prepositioned at 372 worldwide locations. They fall into three major classes and one miscellaneous commodity class:

(1) Auxiliary fuel tanks, pylons, and ejection racks
(2) Petroleum products (POL)
(3) Airmunitions
(4) Film, rations, chaff, etc.

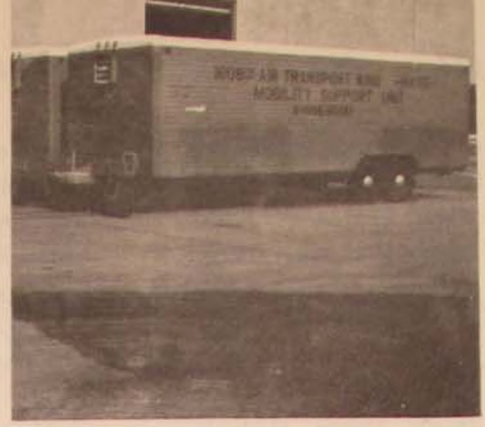
Although war consumables are of prime consideration as war readiness materiel, there are a number of other materiel identities considered as war readiness materiel for which the Air Force computes requirements in packaged quantities.

(b) *Spares and spare parts.* These WRM spares and other related technical supplies to support a specific period of wartime activity fall into two categories: war readiness spares kits (WRSK's) for aircraft, and equipment spares for aerospace ground equipment (AGE).

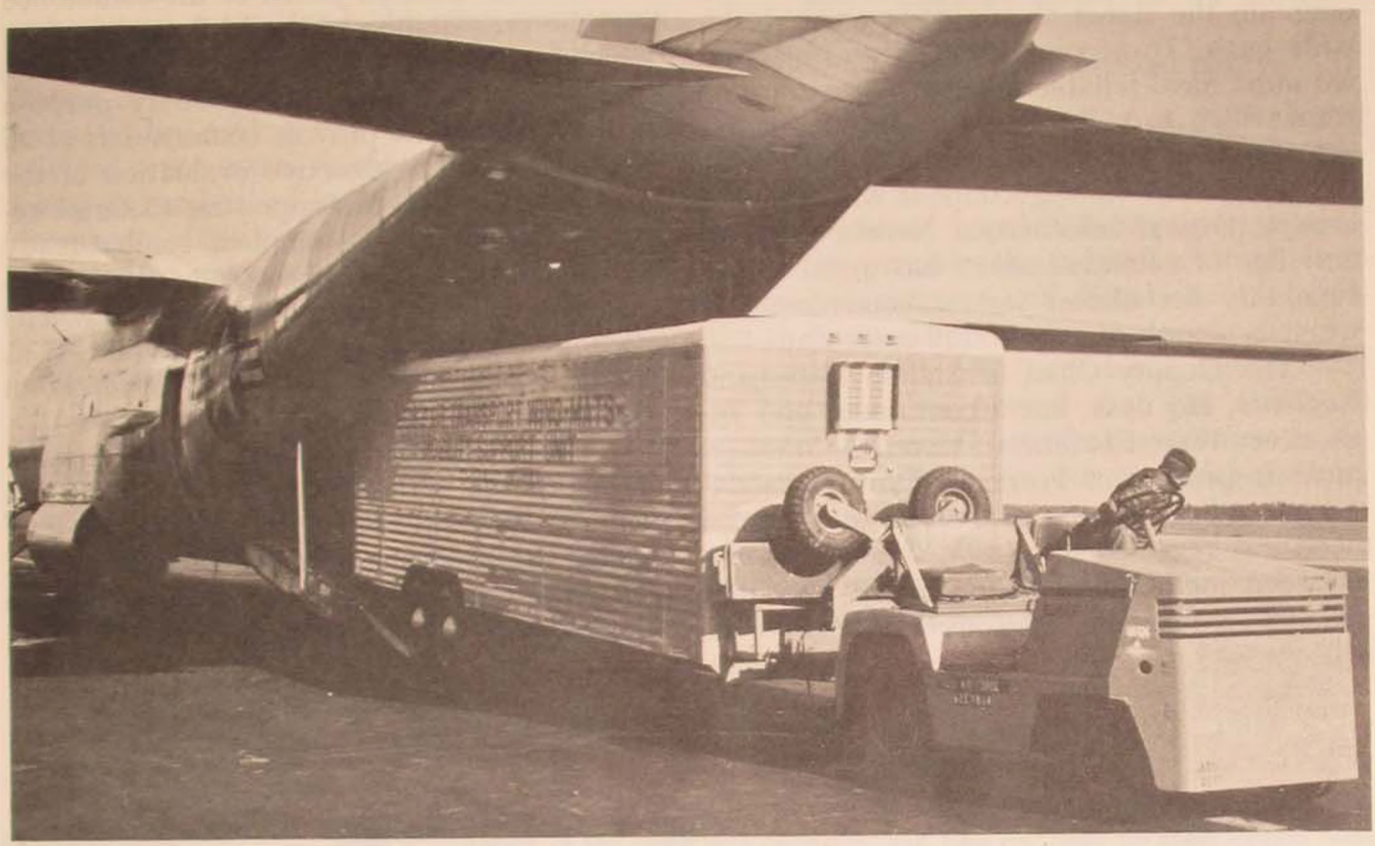
(c) *Station sets.* These sets consist of direct mission support equipment that must be in place at planned wartime bases prior to the arrival of combat units or staging teams (e.g., flight-line equipment, aerospace ground equipment, etc.).

(d) *Housekeeping sets.* These sets consist of items required for limited administrative and housekeeping purposes that must be prepositioned at planned wartime operating locations (e.g., beds, messing equipment, desks, typewriters, tents, etc.).

(e) *Gray Eagle packages.* These packages are a combination of housekeeping and station sets. Each is designed to support 4400 people on a bare base and can be divided into increments to support four bases of 1100



Air-transportable mobile units containing a 30-day supply of war readiness spares kits (WRSK) to support tactical units await loading into transport aircraft. Increased mobility and improved support ensure availability of tactical aircraft for contingency operations.



people each. The Gray Eagle packs are strategically stored so that they can be airlifted to any location in the world to meet wartime requirements.

(f) *Field rations.* These are prepositioned at planned operating locations for augmentation personnel assigned in support of planned wartime activities.

USAF WRM rating system

The supply management techniques of the Air Force have changed considerably over the past twenty years. Technological advancements have resulted in the development of sophisticated weapon systems that require a tremendous amount of equipment and supplies to be serviceable and on hand in order to enable our combat units to react instantaneously with the support necessary for accomplishment of missions assigned in the attainment of national objectives.

The increasing complexity of our day-to-day problems causes us often to lose sight of the long-range goal of the entire Air Force logistics effort, which is to provide our combat-ready forces with all the necessary serviceable assets to support the operation plans at optimum cost. Our immediate concern today is support of the USAF mission in Southeast Asia, and we are doing an excellent job. However, our national goals and treaty com-

mitments dictate a need for combat-ready forces over and above those being used to support the Vietnam contingency. To accomplish this requirement, we must have serviceable war readiness materiel on hand. The fact that we are doing so well in support of Southeast Asia today is relatable to the serviceable condition of our WRM prior to our involvement there. There is a continuing need to maintain the status of our WRM on a worldwide basis. To accomplish such an objective, we must have reliable and current asset data from which to make sound appraisals of our support capabilities. Electronic data-processing equipment (EDPE), coupled with the Automatic Digital Information Network (AUTODIN) line of communication, has given us the capability for almost instantaneous reaction when in search of commodity asset data.

The Deputy Chief of Staff/Systems and Logistics, Hq USAF, has a continuous and aggressive War Readiness Materiel Management Improvement Program. During the development of this improvement program a need was revealed for a closer understanding between members of the Air Staff and staff officers in the field who are responsible for supervision of the WRM program. Accordingly, in July 1965 the first USAF ALMAJCOM Worldwide WRM Management Conference was held. Many problems were resolved, and a number of other problem areas were isolated for further study. The conference has had far-reaching results in improving logistic support to the combat forces of the USAF.

One of the high points of the conference was the presentation of the M-Rating System, which had been in the process of development since September 1964. The primary purpose of this system is to provide commanders at all echelons with an objective evaluation of the readiness posture of supporting materiel required to provide a complete combat-ready unit, in the event of contingency plan implementation or escalation to general war. The system utilizes the EDPE, AUTODIN, and 473L Command and Control System currently in existence.

The philosophy embodied in the WRM rating system is that combat capability is dependent on *both unit combat readiness and logistic support readiness.* The USAF has had, for a number of years, a proven effective method of evaluating operational readiness,

known as the C-Rating System, as outlined in AFM 55-11. Essentially, the C-Rating System assesses the combat-ready status of the weapons support platform (the aircraft) and crew capability. The status of logistics support readiness, while inherent in the commander's evaluation of his readiness posture, has been largely subjective and, prior to the development of the M-Rating System, did not portray a total and objective assessment of his logistics support capability. The M-Rating System is designed to provide this objectivity by evaluating the effectiveness of selected WRM assets to meet combat requirements as established in wartime requirements documents. It is a materiel management tool designed to give more knowledge of what is available to support combat units, to identify WRM factors which limit the capability of the individual combat unit, and to compare total combat readiness of like units. Units are rated on the basis of available WRM to meet combat operational requirements. Use of the M-Rating System will provide the information needed to assess all the factors affecting an operational unit's combat capability.

There are fourteen major commands responsible for the storing, maintaining, and reporting on the status of WRM, utilizing the M-Rating System. Unit M-ratings are categorized as follows:

M-1 – materiel combat ready—no limiting factors

M-2 – materiel combat ready – minor deficiencies

M-3 – materiel could be committed—major discrepancies

M-4 – materiel not combat ready.

To attain an M-1 rating, a tactical unit must possess 95 to 100% of its authorized WRM. The M-2 to M-4 ratings represent a decreasing operational capability requiring aggressive actions such as the redistribution of assets or the procurement and distribution of additional assets. These rating standards may appear high, but past experience, particularly in Vietnam, has proven that our ability to initiate and sustain combat operations is directly proportional to our materiel posture.

The commander possessing the WRM is responsible for designating the M-rating by utilizing the established standard percentage factors for determining the rating. The M-

M-kit offloading capability. The automatic loading ramps adjust to the height of the truck and permit rolling bins on. Built-up main wheels have been put on mobilized racks. Bulk storage items, mostly tires, have been consolidated onto cargo pallets to permit rapid offloading and reduce aircraft loading time. Waterproof plastic envelopes are riveted onto the bins, eliminating the old problem of taped or glued envelopes falling off the bins.

War readiness spares kits for F-105 aircraft. Each of the four kits is a miniature base supply, complete with $2.5 million worth of spare parts and capable of sustaining one tactical fighter squadron's war operations for 30 days.

rating cannot be higher than the rating designated in the standards for computation. However, the originating commander may lower the rating if in his opinion the existing shortages restrict the accomplishment of the assigned mission. The commander's reason for lowering an M-rating will be contained in the remarks section, and it will be substantiated in the limiting factors section of the report. The major air commander has the prerogative of lowering the M-rating if he believes that the limiting factors reduce the combat support capability below the estimate of the originating commander.

The methods used to compute the M-rating are included in Section H, Part I, Volume I of AFM 67-1. The report for the implementation of the system is an expansion and revision of the current WRM Support Capabilities Report (RCS: 5-AF-S11). The report has been changed from a quarterly to a monthly cycle and automated and is transmitted by AUTODIN. The data flow from the planned operating bases (POB's) to the major air commands for quality control, then simultaneously to Hq AFLC and Hq USAF. The WRM Support Capabilities Report assists in preparing logistical capabilities estimates, feasibility studies, and appraisals of operations plans.

Reports on war consumables and spare parts as well as station sets are included, to emphasize the effectiveness of these categories in support of the combat aircraft programmed in USAF war plans.

The reports on housekeeping and rations provide data relative to Air Force bases and their capability to provide logistics support for assigned and programmed augmentation personnel. The Gray Eagle reports on air-transportable housekeeping packages provide data relative to the status of each increment of the package to support specific force structures.

The monthly reports are in three parts: Section 1—statistical data; Section 2—commander's capability statement; Section 3—detailed information concerning the supply status of items which restrict or limit the accomplishment of the unit or base assigned mission.

Each echelon of command has responsibilities for the success of the M-Rating System. Briefly, they include the following:

Base and unit commanders
- —continually evaluate WRM status
- —requisition shortages
- —identify limiting factors
- —validate and submit reports.

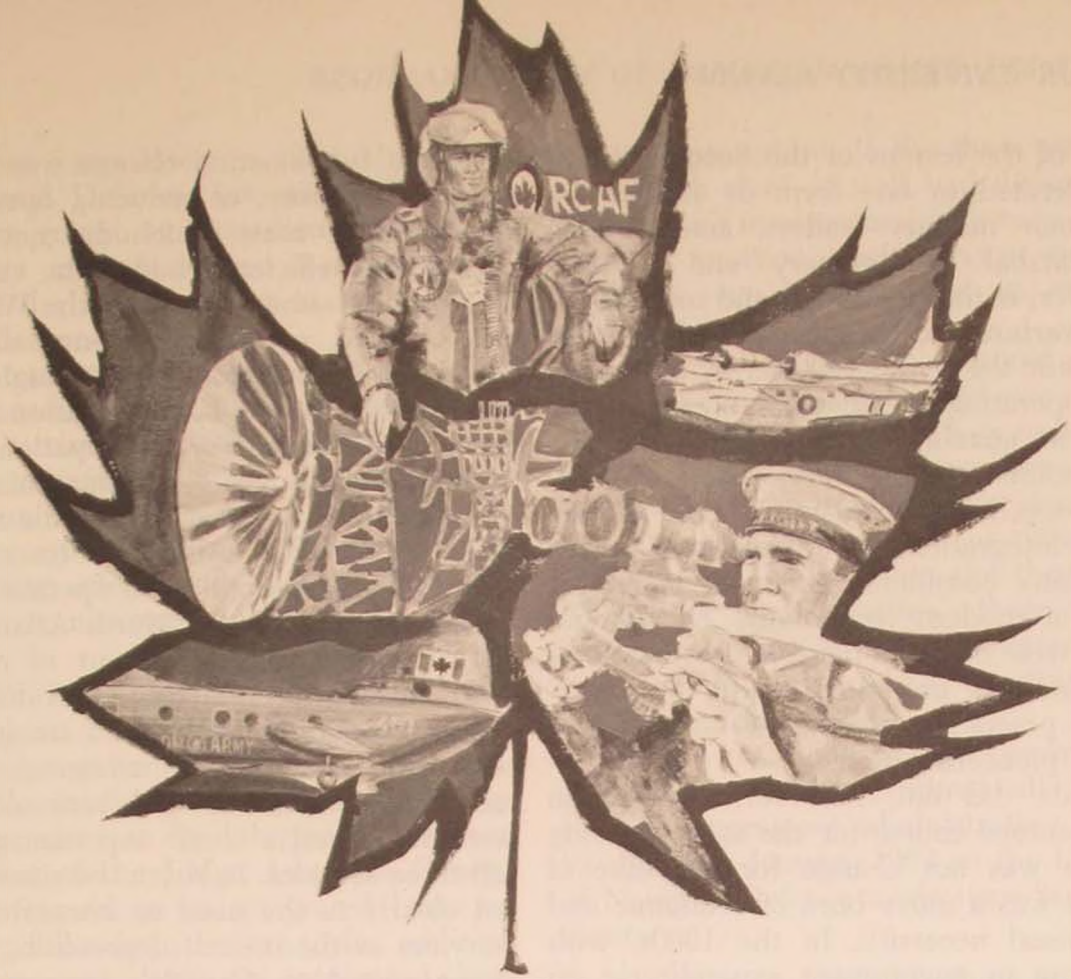
Major air commands
- —consolidate reports
- —provide quality control
- —take appropriate action on limiting factors
- —forward reports to AFLC and USAF.

Hq AFLC
- —coordinates the reported deficiencies with Item Managers (IM's), System Support Managers (SSM's), and Hq USAF
- —takes corrective action to procure materiel that is not available in the USAF supply system.

Hq USAF
- —receives reports and reproduces them on machine run listings for Air Staff use
- —processes reports into the USAF Command and Control System (473L)
- —analyzes the reports in Air Staff and coordinates with AFLC/MAJCOM on required corrective action.
- —verifies M-ratings during operational readiness inspections by the Inspector General.

I am extremely optimistic that the data contained in these reports, plus the competitive impetus generated by the M-Rating System, will be of great assistance toward improving the logistics support to the combat units of the USAF. For the first time in the history of the Air Force, command and staff personnel at all echelons have an automated reporting system that realistically, objectively, and responsively evaluates the capability of the Air Force war readiness materiel to support the wartime mission of the tactical units.

Hq United States Air Force



REORGANIZATION OF THE CANADIAN ARMED FORCES

AIR MARSHAL F. R. SHARP, RCAF

IN JULY 1964 Canada launched the first phase of a major reorganization program calling for the integration of its armed forces as a first step towards the complete unification of the forces.

Now, close to three years after the start of this unprecedented organizational move, I would like to cite the reasons for the program and review its progress, current planning, and the general effect the reorganization has had on the men and women of our armed forces.

When the Canadian government announced in a White Paper on Defence, tabled in the House of Commons in March 1964, its intention to integrate its forces under a single Chief of Defence Staff as the first step toward a unified defence force, the announcement created wide interest not only in Canada but in many other countries. It was the subject of considerable speculation and, inevitably, some skepticism. And although it was generally acclaimed in Canada by the press and the general public, it had its critics—including a few retired senior officers. The interest shown by other nations ranged from idle curiosity to deep interest, mixed, in some cases, perhaps, with a degree of alarm. In this connection, the story is told of a military attaché in Ottawa who cheerfully admitted that his instructions were to report only on the program's failures.

One of the lessons of the Second World War, reiterated in one form or another by many senior military leaders, among them Field Marshal Montgomery and General Eisenhower, is that the scope and methods of modern warfare and defence technology have largely made the conduct of war by individual services operating in separate and independent roles an anachronism.

For some years military writers and defence leaders have been writing and talking about the integration and unification of armed forces. Many considered them an inevitable outcome of modern technology. Theory and principle were easily defensible. But here was a nation actually proposing to put the principles into practical application. Canada had taken the pioneering step.

Canada did not, however, embark on this momentous course for the sake of being first. This was not change for the sake of change. It was a move born of economic and organizational necessity. In the 1960s, with the increase in government expenditures on social programs and the rising cost of government in general, the defence budget was fixed at a figure of approximately $1.5 billion. Both the Navy and the Army needed re-equipping. Each service was bidding for the defence dollar without any means of ensuring that its slice of the financial pie would be adequate for its needs and within the best interests of the country as a whole. Maintenance and operational and personnel costs were taking an increasing proportion of the total defence budget and forcing a decline in the money available for equipment needed to modernize the forces. In 1963 a projection of operating and maintenance costs, taken as a percentage of the total budget, indicated that by 1968/69 practically no money would be available for the purchase of operational equipment.

Assuming that Canada intended to maintain modern military forces, there were only two possible courses of action—increase the budget or reduce operating and maintenance costs. In fact there was no guarantee that a larger budget would solve the problem; operating and maintenance costs as a percentage of the total budget would continue to rise unless a fundamental change was made. All means, therefore, of reducing operating and maintenance costs which did not prejudice operational efficiency had to be explored.

At the same time, since the White Paper had placed considerable emphasis on the need for Canada to maintain highly flexible and mobile forces in anticipation of continued, if not increased, participation in peace-restoring and peace-keeping missions, the structure of our forces had to be adapted to this policy. We needed a force structure which would permit us to operate effectively with our allies in the North Atlantic Treaty Organization and in support of other commitments, including United Nations peace-keeping operations. We also recognized that we could not take full advantage of recent advances in science and technology unless we established a single top management for all three services. In short, the situation pointed clearly to the need to integrate the three services as the means of providing a defence force suited to Canada's requirements and financial means.

Before 1964, each service—Navy, Army, and Air Force—existed as a separate, independent entity with its own headquarters and its own command, administrative, and support organizations. There was considerable triplication of functions among the services. We had triplication in logistics, communications, transport, recruiting, training, pay and finance, personnel administration and services, and even in such static engineering functions as building maintenance.

trends towards integration

In the postwar period there had been a natural evolution towards greater interdependence and cooperation among the services and towards integration of common functions.

In 1946 the three wartime ministers, one for each service, were replaced by one Minister of National Defence, providing single political control over the armed forces. In 1947 centralized coordination of research activity for the three services was achieved when the Defence Research Board was estab-

lished. Two years later, in 1949, changes to our National Defence Act standardized the regulations governing Canadian military law and justice and introduced a common approach in the three services to the legal aspects of defence.

Our training program for officer cadets in our Canadian services colleges was established on a triservice basis. The cadets, while retaining individual service affiliation, have been brought together in an identical academic atmosphere during the four years of their training, which leads to a university degree and commissioned service in the regular forces.

In 1956 the medical services of the Navy, Army, and Air Force were integrated, and in 1958 an integrated chaplain service was formed. The medicals and chaplains were not the first services to be integrated, however, as the office of the Judge Advocate General had been formed on an integrated basis immediately following the war. In addition, some services, although not integrated, have functioned on a triservice basis. For example, dental services have always been provided for all three services by the Army's Royal Canadian Dental Corps and all postal services by the Army's Canadian Postal Corps.

Another indication of the trend towards the integration of the services was the strong attempt made to develop common methods and policies in the three services through a number of triservice committees established at National Defence Headquarters. At the same time an effort was made to create the machinery for coordinating the operations of the three services by establishing the position of Chairman, Chiefs of Staff Committee.

The Chiefs of Staff Committee had consisted of the Chief of the Naval Staff, the Chief of the General Staff, and the Chief of the Air Staff, with the chairmanship being held by the senior chief. In 1951 a full-time chairman was appointed, independent of the three services. He did not, however, have executive authority over the services, and, to a degree, the Committee became a forum for discussion, although some progress was made in coordinating and standardizing the activities and procedures in the three services. But since each chief of staff had direct access to the service's minister and maintained his independent position, each service was able to push its own interests and its own equipment programs in isolation.

Since the Committee required unanimous agreement before it produced any recommendations, each chief of staff exercised a veto on its deliberations. Even when agreement was reached, the implementing decision often bogged down in the maze of different practices and methods within the three services. This "rule by committee"—there were over 200 at National Defence Headquarters in Ottawa—resulted in delays, frustrations, and continued triplication.

A Royal Commission on Government Organization, which examined all aspects of federal government administrating, in making its report in January 1963 on the Department of National Defence made some pointed comments:

> There is a growing range of activities of common concern to the services, for which the traditional basis of organization is unsuited. It is increasingly recognized that to maintain three separate organizations for such functions is uneconomic.
>
> The traditional pattern also aggravates the rigidities in the defence establishment resulting from collective arrangements. It has meant, for example, that in finding signallers for the Congo at short notice, the Canadian Army could look only to its own resources in the Royal Canadian Corps of Signals, having no access to the large reservoir of communications personnel in the other two services.

Phase 1—Canadian Forces Headquarters

The stage was set and the climate was ripe for integration. In July 1964 Parliament approved a bill which amended the National Defence Act and provided for the appointment of a single Chief of Defence Staff to replace the Chairman of the Chiefs of Staff, the Chief of the Naval Staff, the Chief of the General Staff, and the Chief of the Air Staff. Thus, one man became responsible to the Minister of National Defence for the admin-

istration and employment of the 120,000 men and women who were serving at that time in Canada's regular forces. This was a fundamental and essential step towards integration. It made possible the reorganization of the Naval Headquarters, Army Headquarters, and Air Force Headquarters into a single Canadian Forces Headquarters, with four functional branches, each headed by a lieutenant-general or an officer of equivalent rank. These branches, with some readjustments and changes in designation over the last two years, have become

—the Branch of the Vice Chief of Defence Staff, who is primarily responsible for military operations, plans and operational readiness, and, in conjunction with the Deputy Minister, the development of the Integrated Defence Program

—the Personnel Branch, headed by the Chief of Personnel, who formulates personnel policy, including medical, dental, and chaplain services

—the Technical Services Branch, whose Chief is responsible for all engineering and development programs and plans and policies for the procurement of materiel and maintenance

—the Comptroller General Branch, which is responsible for three main fields: administration, financial, and manpower control and management.

The elimination of the three chiefs of staff and the appointment of a single Chief of Defence Staff with executive authority over the three services was a fundamental departure from the traditional military organization in most Western countries, and it drew some criticism. The main objection was that it placed too much power in the hands of one man or, alternatively, that the responsibilities would be so great as to overwhelm him. In practice, neither criticism has been shown to have any validity, and today there are few critics of the single chief concept.

Phase 2—the integrated command structure

Even before completion of the integration of the Canadian Forces Headquarters, which began on 1 August 1964, the planning for the second major phase in the integration process, the creation of an integrated command structure for the field forces, was begun.

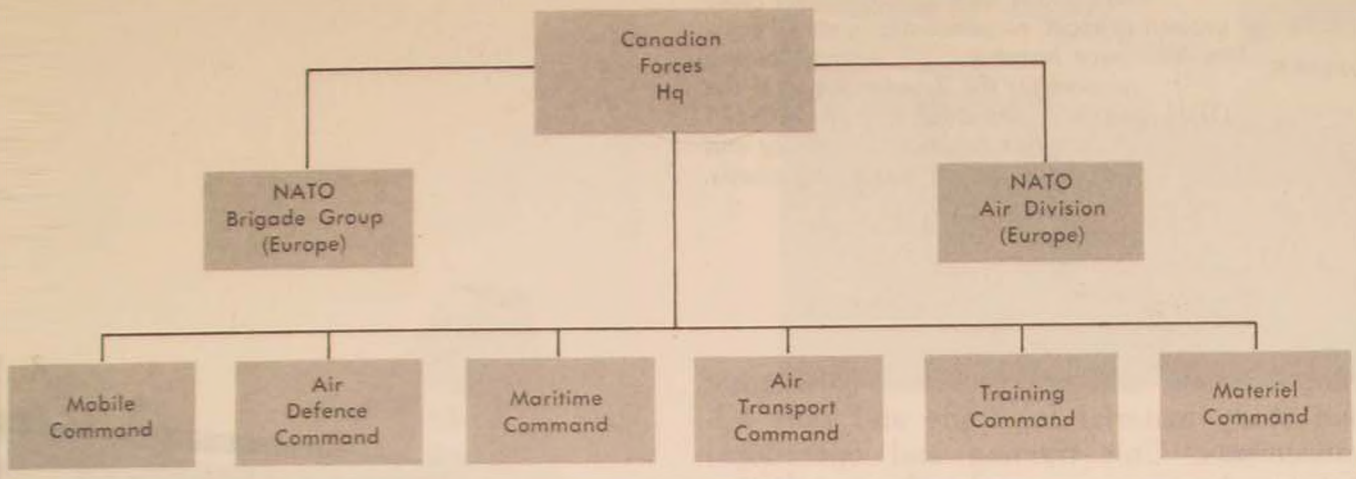
This was announced publicly in April 1965. The structure was designed on a functional basis, streamlined to reduce overhead, and mission-oriented to fulfill the roles in support of government commitments to the maximum effect within the resources available, responding as integrated, highly mobile forces rather than according to the traditional functions of sea, land, and air.

The plan called for the replacement of eleven separate service commands by six integrated functional commands: three of them operational commands—Mobile, Maritime, and Air Defence; and three support commands — Materiel, Training, and Air Transport. A diagrammatic outline of the field command structure is shown in the accompanying chart.

Mobile Command. Established on 1 October 1965, Mobile Command has the role of providing tactical air and land forces for quick deployment in any part of the world. With headquarters at St. Hubert, near Montreal, it is our largest command and consists of the mechanized 4th Canadian Infantry Brigade Group (serving in Germany under NATO command); the 3rd Canadian Infantry Brigade Group, a mechanized brigade designed to support the NATO land forces in Europe; and the 1st and 2nd Brigade Groups, which are being converted to airportable brigades and will be specially trained and equipped for rapid deployment by air. Two battalion groups in one of the airportable brigades will be trained for operations with Allied Command Europe Mobile Force under SACEUR's command, but they will be based in Canada.

In addition to the two airportable brigade groups, the Mobile Command order of battle will include the Canadian Airborne Regiment which will be formed this year. The regiment will have a strength of about 1200 of all ranks and will give us a highly trained, immediate-reaction parachute force. It will

Canadian Forces Command Organization



consist of two small infantry parachute battalions, each with a support company, three rifle companies, and a reconnaissance company; a light artillery battery; an engineer squadron; and a communications company.

The tactical air element, consisting of squadrons of CF-5s (an improved Canadian version of the Northrop F-5), is to be phased in during the next two years, and additional mobility and flexibility will be provided by Buffalo aircraft, by light and heavy helicopters, and by strategic transport from Air Transport Command and sea transport, as required, from Maritime Command.

Maritime Command. All maritime forces, sea and air, have been placed under Maritime Command, which was formed on 17 January 1966. The command headquarters is in Halifax, Nova Scotia, and there is a deputy commander with a small staff in Esquimalt, British Columbia, to facilitate local direction and control on the west coast. Maritime Command's primary role continues to be antisubmarine warfare, and planning is under way to increase its capability for general-purpose tasks.

Air Defence Command. The operations of Air Defence Command, with headquarters in North Bay, Ontario, were not significantly changed by the integration of our forces. It continues to contribute to the defence of our continent in partnership with the forces of the United States and is equipped with CF-101 Voodoo interceptors and Bomarc surface-to-air missiles. In addition, it operates a number of radars in support of its role.

Air Transport Command. Integration has had little impact on Air Transport Command, which continues to be responsible for air transport operations for all the services. Its function has been more intimately integrated into the overall control and planning of the forces, however, with the result that its operating efficiency as a carrier has been greatly increased. Command headquarters is located at Trenton, Ontario.

Training Command. Based on the former RCAF Training Command Headquarters in Winnipeg, Manitoba, the new integrated Training Command became effective in January 1966, and by 1 April 1966 it had absorbed all training establishments in the three services. The command is responsible for all individual training for the Navy, Army, and Air Force. Its main roles are the selection and classification of personnel, training up to ad-

The CF-5 is used by Canada for close ground support, reconnaissance, aerial combat, and pilot training. . . . Also providing support for the defence forces is the DDH helicopter destroyer. . . . The CC-115 Buffalo offers additional mobility and flexibility for deploying troops.

vanced levels, and the provision of training and study material for trade and rank advancements. Unit training and operational training, however, are under the jurisdiction of the operational commands.

Materiel Command. Materiel Command, brought into being 1 August 1965 with headquarters in Rockcliffe near Ottawa, provides the logistic support for the Canadian Forces. It is responsible for materiel procurement, warehousing, distribution, and major repair and overhaul. The programs of consolidating, integrating, and automating the separate supply systems of the services, with which it is now involved, will not be completed for several years.

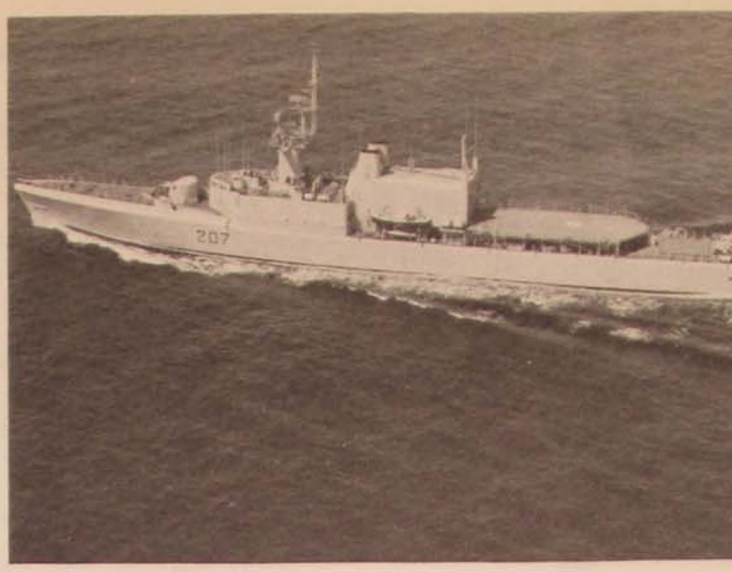
1 Air Division. Our Air Division in Europe with its CF-104 Starfighters has not been greatly affected by our integration program because of the nature of its role in 4th Allied Tactical Air Force.

other organizational changes

Other significant reorganizational results of the integration process were the consolidation of several hundred units, camps, and stations into 39 Canadian Forces bases, which came into being on 1 April 1966; a centrally controlled reserves organization under a Deputy Chief Reserves (a major-general) at Canadian Forces Headquarters, with 12 regional district headquarters across Canada for the supervision of the reserves of the three services; the construction engineering branches and services integrated into an effective, streamlined organization with the elimination of duplication and triplication in the implementation of projects, technical review, engineering advice, design services, and real property services; and the creation of an integrated Canadian Forces Communications System, to coordinate and manage the fixed communications facilities of the three services and eventually integrate them into a single system.

planning involved

Although it was originally planned that

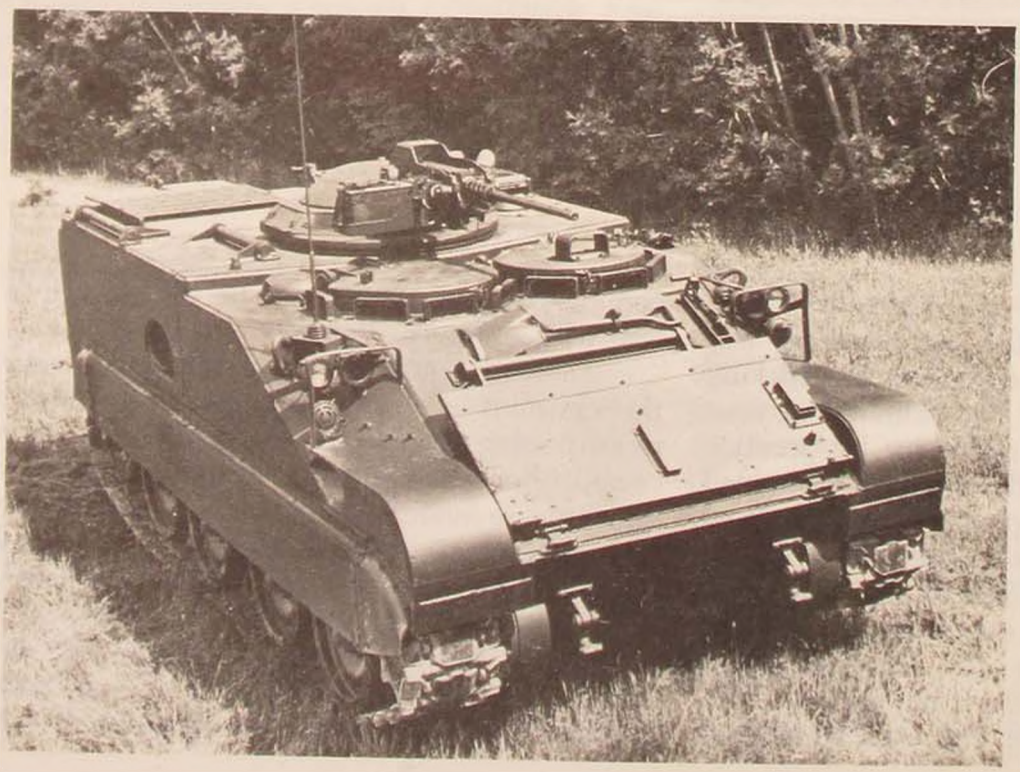


the changes would take place step by step—and in broad terms this has happened—it was found that the whole complex, interlocking project not only had to be evaluated in time and adjusted as found necessary by practice but also, once launched, had to be planned concurrently. For example, it was difficult to arrive at a final decision on the staff structure required at Canadian Forces Headquarters before the command structure was established. Similarly, there was an interdependence between the functions and organizational establishments of the proposed functional commands, and all had to be developed in line with the overall aims.

There were some headaches involved: the constant problem of manpower control, repositioning personnel within the changing organizations; conducting a continuing review and re-evaluation of the new structures; revising policies, procedures, and regulations to bring them into a common form and making them consistent with the new look; and operational and administrative problems involved in the concurrent phasing out and phasing in of the old and new commands.

C-130E Hercules

M113 Armoured Personnel Carrier



Because it is an involved, complex process, extending into every aspect of our activities, careful and thorough planning has to be maintained throughout the process. PERT programming and computers are being used to maintain overall control and to coordinate and monitor the progress of the approximately 300 major activities involved, to determine the connection between them, set time limits and intermediate aims, and allocate responsibility for them.

There are four key and pacing programs. The first is the development of the functional command organization and the assignment of missions to each of the commands. This is nearing completion and requires only some adjustments and refinements.

The second is the development of the force structure for the operational commands —Mobile, Maritime, and Air Defence—so that they can carry out their assigned missions. Once the operational force structure is approved, the optimum base configuration can be worked out. Only then can the force structure for the support commands be worked out.

The third is a major modernization program which includes a computerized logistics system for Materiel Command, an automated switched network for the Canadian Forces Communications System, and a modernization of training methods in Training Command.

The fourth pacing program is the personnel management program to establish a single personnel management system.

parliamentary approval for unification

A bill to amend the National Defence Act and give parliamentary approval to the final phase, unification, was passed by Parliament in April. In the popular mind, the first two phases, the establishment of an integrated Canadian Forces Headquarters and the functional commands, constituted integration, whereas the third, unification, is often regarded as a separate and distinct phase. Literally, integration of the three services began when the National Defence Act was amended abolishing the three separate chiefs of staff positions and creating a single Chief of Defence Staff. Integration, then, is the process whereby the three services were brought together under single control and management with common logistics, supply, and training systems, operating within a functional command and organizational structure but retaining their separate legal entities and the legal barriers between them. Unification is the creation of a single service in which all officers and men will be held in one entity rather than three.

what has been achieved so far

One is always asked, What has the integration process achieved so far? What benefits have been derived from the organizational changes? In some areas it is difficult to measure the progress of the new functional posture in relation to the former traditional organization because of the totally different basis. However, when an assessment of the progress is made in terms of the stated aims, a number of advantages and benefits become clearly evident. The main aims in integrating the forces were, in outline:

1. To reduce overhead costs and costs for nonoperational activities and thereby to allot a larger percentage of the budget and resources to operational needs and equipment.
2. To change our top-level decision-making process and modernize our management to take optimum advantage of our resources.
3. To build more flexible forces, more in keeping with the changing nature of our international commitments.
4. To provide our men and women with more satisfying careers.

First, consider the reduction of overhead costs. The first and obvious place to look for unnecessary overhead was in the various headquarters. There was at one time justification for relatively large headquarters. If the Canadian Forces were to be capable of rapid substantial expansion, there might be justification for employing more personnel than required in a headquarters. These personnel would form a base for expansion. In

Falcon jet transport

the context of the present world situation, however, we need forces in-being. There may be no time for expansion. The size of the headquarters, then, should be related to the functions we must be able to perform on short notice.

With one or two exceptions, we had complete triplication of functions by the three services. Each, for example, had headquarters personnel responsible for the logistics function, although each service had these located at a different level in the organization.

To reduce this overhead in headquarters, a single top-level headquarters, Canadian Forces Headquarters (CFHQ), and a new command structure were put into effect.

Triplication also existed in some of the functions such as logistics, communications, transport, recruiting, training, pay and finance, personnel administration and services, and some engineering functions such as building maintenance. Single management of these functions at either CFHQ or command levels will alleviate this triplication. Some programs to bring this about have been completed, and others are now being introduced.

Finally, triplication or duplication also existed in the bases and other facilities—three electronic schools, for example, each with its own expensive training equipment and other special facilities. The creation of functional commands and Canadian Forces bases permits the rationalization of these triplicate facilities. As a result of these and other programs, our establishments—that is, our manpower requirements—have already been reduced by about 7000 establishment positions. Other reductions will be identified as the program progresses.

The second aim was to change the emphasis of our top-level decision-making so that policies, plans, and decisions concerning major procurement programs would be decided on the basis of the total Canadian military forces' needs rather than on the narrower needs—and sometimes incompatible needs—of individual services. With the creation of

a CFHQ and functional commands, the framework for such decision-making was built. The introduction of the integrated defence program created the machinery.

The validity of military policies and plans is now measured against government defence policy as outlined in the White Paper, rather than against each service's interpretation of its part of it. The validity of recommended procurement programs is now measured against three criteria: Does it make optimum contribution to the accomplishment of an approved mission or role as expressed in the plans? Does it fit within the percentages of our total budget that we have decided to devote to each step in the war escalation ladder, which ranges from aid and observer teams through limited war to nuclear holocaust? Does it fit within our budget and manpower limitations?

This system of deciding on major procurement programs is a far cry from the old method whereby each service tended to jockey for all the funds it could justify. It is demonstrably resulting in a more balanced and effective military force, dollar for dollar.

A single management system enables us to take advantage of the latest advances in science. In the support functions such as logistics, pay and finance, and training, economies of scale permit the introduction of computerized systems which the three separate services could not afford to buy. The modern management processes being computerized include program control, pay system, logistics system, management information system, and personnel records-keeping system. The significance of these innovations is not so much that the processes are computerized as that they make use of the latest and most modern of management techniques, that they produce substantial increases in effectiveness and efficiency, and that they demonstrate to our servicemen that they belong to a progressive and forward-looking organization.

In the operational functions, the reduction in nonoperational overhead costs makes it possible, within a limited budget, to introduce new operational equipment. We have embarked on a modernization program to improve the operational effectiveness of the forces. Modern equipment either under procurement or planned includes:

CF-5 tactical support aircraft, selected primarily for the support requirements of land forces of Mobile Command

M113A armoured personnel carrier, to improve the mobility of the land forces

Additional C-130E Hercules aircraft, for the strategic mobility of the forces

A new tracked reconnaissance vehicle

Buffalo aircraft and helicopters for Mobile Command

New propulsion system and automatic short-range air defence system for the DDH's (helicopter destroyers), employing the most advanced techniques

New fire-control system for Maritime Command

The Falcon small jet transport for Air Transport Command

Backup interceptor control system (BUIC) for Air Defence Command.

And a study in depth is being made of the fixed communications needs for the Canadian Forces Communications System, with a view to complete modernization.

These examples of our modernization program are all possible within a budget which, without integration, would have been devoted almost entirely to day-to-day operations and maintenance, i.e., maintaining tired old equipment.

So that we can contribute to all ranges of the war escalation spectrum, rather than mainly to the direct deterrent to all-out war, we require flexible forces. Flexibility of this sort requires at least two things: a wide range of equipment (which, without integration of our forces, we could not afford) and a joining together of sea, land, and air elements under common management. Considering the characteristics of modern weapons and the requirements for quick response, the three services must be capable of reacting together. The chances of achieving this quick, coordinated reaction are much greater with a unified force.

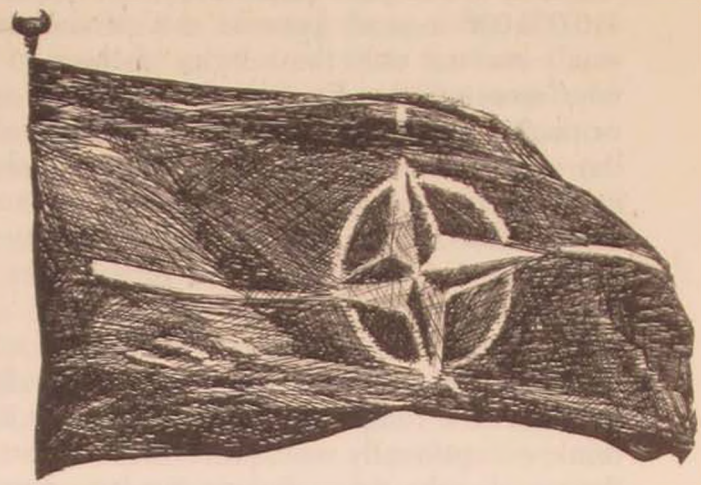
The personnel management program is involved but is one of the most rewarding aspects of our reorganization. A common trade structure has been implemented, reducing over 300 trades to approximately 100, and a common pay structure for the three services has been put into effect. Integration has created the necessary climate and conditions for many changes that will result in more meaningful and satisfying careers for the men and women in our Canadian Armed Forces.

THE REORGANIZATION of the Canadian Forces is a monumental task. I doubt whether a fundamental reorganization of this magnitude has ever been undertaken by any other large military or civilian organization. Creating the new and modern military concepts, doctrines, and procedures has been for many of us a once-in-a-lifetime opportunity. Whether the Canadian plan serves as an example for any other nation in the integration or unification of its forces must depend on the size of its forces and their roles, on the economic and political necessity, and on the many factors which affect a nation's capability to accept such radical reorganization.

We are living in an era of significant and rapid changes. Major advances in science are changing our traditional way of doing things, and the rapid development of defence technology is diminishing the value of traditionally organized services as independent entities. As Arnold Toynbee points out, technology is a unifying force. In the context of the spiraling cost of defence, independent traditional services, as presently constituted, may become a luxury only the most wealthy nations will be able to afford.

Ottawa, Ontario

Military Affairs Abroad



THE UNITED STATES AND NATO—PAST, PRESENT, AND FUTURE

THE HONORABLE CHARLES E. BOHLEN,
U. S. AMBASSADOR TO FRANCE

THE subject of the first Thomas D. White lectures is the North Atlantic Treaty and the North Atlantic Treaty Organization. To understand our involvement in NATO and our involvement in Europe, it is necessary to go back into history. The United States, for 175 years of its existence, had been following a policy of isolationism, so called. This was set forth most eloquently by President Washington in his Farewell Address, in which he warned our young and struggling republic to avoid involvement in any entangling alliances which might involve us or drag us into the quarrels of Europe. And let me say, when the term "isolationism" is used it always has referred to the attitude of the United States government and the American people toward the old Continent of Europe.

We entered World War I late, it is true, but we did enter the war and played a decisive part in the final victory. Then after the end of the war, tradition was too strong for President Wilson, and the people of the United States returned, almost with a sigh of relief, to the comfortable position of security and isolation which had been characteristic of our entire history. There were actually real reasons for this. In 1918, despite all the damage of the war—the loss of life, the loss of material wealth—the great democracies of the world, Great Britain and France in particular, still held most of the ramparts of the world. You could look all over the globe and see the British flag flying in every corner. So there was no immediate need for the United States to change its attitude of isolationism, which was not only comfortable from a security point of view but also infinitely cheaper than anything else has been. I might mention that when I joined the Foreign Service in 1929 the State Department budget was $17,000,000, of which 50 percent or more came back to the

United States Treasury through passports, visas, invoice, and other fees. Therefore, it is not an overstatement to say that the cost to the American taxpayer of involvement in the world as it was then constituted was less than $10,000,000 a year, because out of the total sum came not only the salaries of those of us who were in the Foreign Service then and worked for the Department of State but also the cost to the United States of its involvement in any international organization, such as the Rio Grande Committee, the Safety of Life at Sea Commission, and those types of organizations.

And we entered World War II, still with the tradition of isolationism very strongly upon us. We fought the war, and fought it, I think, exceptionally well. Nevertheless most of the people who were running our government at the time still carried with them certain reflexes from the period of noninvolvement. Some, such as President Roosevelt, did not—during the war—believe that it would be necessary for the United States to maintain *very* appreciable armed forces on the Continent of Europe for any length of time after the war. On one occasion during the Yalta Conference, when Stalin asked President Roosevelt how long he thought it would be necessary to keep troops in occupation of Germany and how long America would be prepared to put up with this, President Roosevelt answered that he thought it would be, roughly, two years. He said he thought that the United States was prepared to participate in a worldwide organization but that we would not be prepared to participate in an organization devoted exclusively to Europe—which was one of the proposals discussed at some of the wartime conferences. As the war drew to a close, I think it would have been difficult to find any planning in Washington that really foresaw accurately what was going to happen.

We had underestimated, I think, the enormous sacrifices, not only in lives but also in material wealth and position, which Great Britain had undergone when she was all alone fighting Hitler. I think we should never forget that from June 1940 to June 1941, when the Soviet Union was attacked, Great Britain was the only country for one whole year that was openly fighting Nazi Germany. Her effort in the war was so outstanding and so valorous in many respects that I think most of our people tended to assume that she would have the same power after the war that she had displayed during the war. I remember very well in December 1946 when the British Ambassador in Washington came into the Department of State (we had had some forewarnings of this but never specifically) and told the Secretary of State that Great Britain no longer could continue to support Greece, that the financial drain was too much, and that therefore it was up to the United States. It was a clear choice of whether to step in and assume the burden or to let Greece go, and Greece would most certainly have gone Communist had we not stepped in. That was the beginning of the United States involvement in Europe. Public Law 75 authorizing aid to Greece was passed in the spring of 1947, and thus the United States, by a conscious act of will, picked up the challenge and of necessity moved in with the financial, economic, and military aid and advice which eventually ended in a victory. And Greece is now a country with the freedom of choice which she

On the evening of 17 February 1967, the first of the General Thomas D. White Lectures was presented at Air University. The general subject for the first group of lectures is the North Atlantic Treaty Organization. The Honorable Charles E. Bohlen, United States Ambassador to France, was chosen to deliver this first lecture because of his intimate familiarity with the whole history of NATO as well as his long friendship with General White. Ambassador Bohlen's discourse seemed so cogent as to deserve a wider audience, and we are pleased to publish it in Air University Review.

THE EDITOR

certainly would not have had, had she gone behind the Iron Curtain.

But even so, recognition of the necessity of a direct United States involvement in Europe was relatively slow in coming. One recalls that the Council of Foreign Ministers, a body which was set up by the Potsdam Conference in order to work out the peace treaties with the defeated nations, finally came to grips with the problem of Germany in the spring of 1947 in Moscow. There, they got nowhere at all. Incidentally it was there that the idea of what came to be known as the Marshall Plan was born in the mind of General George C. Marshall after an interview we had with Stalin in the Kremlin on 19 April 1947. The Council reassembled later on in the year, November, in London. And there it became *absolutely* apparent, clear as a bell to anybody, that the Soviet Union was *not* going to permit the unification of Germany, was *not* going to sign a peace treaty with a German state, *was* going to remain in occupation of East Germany. Her whole attitude was becoming more and more threatening, a condition which was very noticeable to the French and British foreign ministers who were there at the time. They came to General Marshall and asked him what he thought they could do to assure the security of Europe in the face of this possible Russian threat. As I recall, General Marshall told them he thought the formula that had worked in regard to the Marshall Plan in the economic field was the proper one to attempt in the defense field: that was, for the Europeans to go ahead with the treaty they had planned—the so-called Brussels treaty—examine their pooled efforts and any gap between what they could do and what the situation required; then General Marshall told them to turn to the United States, and we would see what could be done to help them out. I don't think, even at that time, that General Marshall was thinking much about a formal military alliance. He was thinking much more in terms of military assistance. But then a number of things happened.

I shall not go into all the details, but the first thing was the Vandenberg Resolution, in the spring of 1948, which was designed primarily to pave the way for a Military Assistance Program for Europe. The British, I think, were the ones who picked up the general idea of a military engagement and called it the North Atlantic Treaty, because they were particularly interested in assuring the security of Norway, covering as it does their eastern flank from the north and the east. The result of these deliberations was the North Atlantic Treaty, the terms of which are well known.

The North Atlantic Treaty bound the signatories thereto to regard an attack on one as an attack on all. The duration of the treaty was to be twenty years. And here's an interesting historical footnote: the country that really made the greatest effort to have that period lengthened from twenty years to fifty was the French Republic. At that time the attitude of the French Republic was somewhat different than it is now. Originally the North Atlantic Treaty was designed more or less the way most treaties or alliances had been designed in the past: it was merely to be a commitment on the part of the participants to go to war under certain conditions. There had not been at the time of the signing, I believe, the thought of creating an organization. This came later.

I think the event that stimulated the idea of creating a permanent organization—to have it in-being for immediate utilization in the event of an attack or threat of attack—was the Korean War. The Korean War was quite a shock to many people all over the world, including of course the United States, but also in Europe. I think up to that time most people had the idea that Communism was essentially an instrument of subversion, propaganda, and political activity, but that military force was not something that you could expect from the Communist side of the world. I think Korea dispelled all those illusions and caused a great deal of alarm, particularly in Europe, for fear that some of the special Communist forces would come over from East Germany and attack Western Europe, which was virtually defenseless. Out of that fear grew the determination *this* time to learn from the lessons of two world wars and to prepare seriously, in a military sense, for the utilization of combined

military forces the instant an attack occurred.

This is what is meant by the North Atlantic Treaty Organization. The SHAPE headquarters was set up in Paris, and the United States, with the *willing* consent of the French—often, in fact, at their instigation—established our bases in France. These actions were based on five agreements that we made with the French government, four of which were supposed to last as long as the North Atlantic Treaty itself. This arrangement was in response to what was then regarded as a very clear and evident threat of possible military action against the Continent of Europe. The threat was intensified by the take-over of Czechoslovakia in 1948, which was the forerunner of the type of operation they feared, a feeling which Korea accentuated a great deal. As a result, in the early '50s there came into being, on the Continent of Europe and particularly in France, this whole complex of military arrangements, which came to be known as the North Atlantic Treaty Organization.

NATO, I THINK, has done its work extraordinarily well. There has been no aggression in Europe, in the area covered by the Treaty. The Communist system has not advanced one centimeter to the west from where it started behind the Iron Curtain. By all the criteria for judging an alliance, I would say the North Atlantic Treaty alliance has been an overwhelming success. It not only has kept the peace but also has provided its members, particularly those on the edges of the Iron Curtain, with a sense of security which has permitted them to develop their day-to-day lives without undue anxiety in the face of the colossus to the east.

But, nevertheless, since those days when this organization was drawn up, there have been changes in Europe. There have been threats. There were threats at the end of 1958. In fact we had almost a continuous crisis from 1958 through 1962 in regard to Berlin—which incidentally remains one of the most potentially dangerous spots on the face of the globe. Berlin is a city that is divided by a wall running right through the middle, and its division is a function of the division of Germany. Nevertheless, since 1962 there has been no sign of any Soviet aggressive move in Europe. This has led some countries, particularly France, to cast into doubt the very origins and basis on which NATO was formed.

One of the fundamentals upon which the NATO organization was constructed, which made it possible for us to have forces and bases in other countries, was the common acceptance of the thesis that *all* would go to war together in the event of an attack. This had no technical legal validity in the sense that during the hearings before the U.S. Senate it was made perfectly plain that it would be the U.S. government alone that would have the power to go to war or not to go to war.

In effect, what France did in March of 1966 by the letters that General de Gaulle sent to President Johnson, Chancellor Erhard of Germany, the President of Italy, and the Prime Minister of Great Britain was to assert the principle that you could not be sure whether you were going to war until you examined the circumstances and saw whether you felt obliged to go to war—or if it was in your interest to do so. Therefore, the French government has taken the position that nothing that seems to imply a commitment to go to war could continue on their soil, and this is the basis on which General de Gaulle has taken the French Republic *out* of the North Atlantic Treaty Organization. It is the basis on which he has asked, or rather demanded, that the United States pull out its troops and vacate its installations in France.

I would like to digress here to say that we have great reason to be very proud of our military in France for the work that they have done. Preparations for the complete evacuation by April 1st have been truly extraordinary. We had 800,000 tons of munitions and war equipment of one kind or another on the soil of France. By April 1st there will be only 6000 tons left, and that will consist of equipment for support of dependents who will stay on there until the end of June. This has been a truly staggering performance, done with great dignity and great style. I think it has

been a great credit to the United States, the way this has been done. It could have been very easy to become embittered and indignant at the French, and it could have led to all kinds of friction that would have done us no good from the point of view of our international standing.

Naturally the question arises as to why the French government did this, and one can only guess. De Gaulle mentioned a few reasons in his letters. First, he seemed to have the belief that membership in the organization somehow limited his freedom of action in the international arena. Of course the United States does not agree with that, because under the terms of the organization *none* of it goes into effect, *none* of it has any operational validity, until the governments concerned make the decision that there has been an attack or that there is about to be an attack. Only then do they transfer the power of command to General Lemnitzer. As it stands now, in time of peace, General Lemnitzer does not have command over even a corporal's guard; he cannot order them to cross a road; all of it is on an "if and when" basis. So we do not really feel that this reason has much validity.

Another reason which has been offered from time to time is that through the operation of the organization France could be drawn into a war—possibly in the Far East—outside the NATO area because of the involvement of the United States. Again, we would question the validity of that reason. Membership in the organization would not increase the risks of France being drawn into wars outside the NATO area.

A third reason given, which I think is also very questionable, is that General de Gaulle felt he would have to divest himself of any encumbrances involving NATO in order to pursue the policies that he wishes to pursue now in regard to the Soviet Union. About all that can be said is that up to the moment there has been no sign that France is going very far in its relations with the Soviet Union. I think the only true explanation that can be given for France's decision is that General de Gaulle is convinced that after 1962—the time of the confrontation over Cuba—there was virtually no danger whatsoever of any war with the Soviet Union. The Soviet Union backed away from that confrontation, and in so doing really changed the basis of their approach to Europe. This is an opinion which can be held and I think is held to some extent by many people in Europe. Of course, it is really based on the old theory of the U.S. nuclear umbrella, which is what is preserving the peace of the world, particularly in Europe. But aside from that, I do not think that this third reason has enough validity to justify the destruction of the NATO setup in Europe. Incidentally, I might remark that General de Gaulle still feels a need for the North Atlantic Treaty—despite the facts that France will be totally out of NATO, with one or two minor exceptions, by the first of April; that SHAPE headquarters will have moved to a place near Brussels; that the U.S. European Command will have moved probably to Germany; that *all* NATO military establishments that were on French soil and *all* American military establishments will have completely vacated France by April. But the United States and thirteen other countries felt very strongly, and still do, that there is continuing need for the North Atlantic Treaty *Organization;* that Europe left to itself would not have the military power to defend itself against a possible attack from the east, to take the extreme example. And this remains our policy as matters stand now.

In fact, one hears a great deal that much has changed in Europe in the last ten years, that Europe in 1967 is not the Europe that it was in 1957. This is true, but most of the changes have been in the realm of the intangibles. The big fact of modern Europe—the division of Germany—still remains as it was, and the Soviets have shown not the slightest sign of changing their attitude toward the continued division of Germany. They recently sent to Britain, France, and the United States, as well as to West Germany, a very tough note denouncing the West Germans for Nazi attitudes, etc., and saying that the only basis on which there could be any peace in the future in Europe would be recognition of two Germanys and acceptance of the frontiers. We are not prepared to do either formally; neither are

any of our allies—including the French, I may add. As long as that situation remains, I think there is reason to be prudent and to maintain our military posture.

In fact, a look at the Soviet Union and at the Communist world reveals a number of very interesting things. The Communist world has been fragmented. The split between the Soviet Union and China is certainly irrevocable. I think that as long as the present governments in China and in Russia persist there is no possibility at all of a reconciliation. The Soviet control over eastern Europe is very much lighter than it was in the days of Stalin, and some of the countries, such as Romania, are beginning to show signs of independence a bit in what they do. But always, all along, the source of military power in the Communist world has been the Soviet Union. And it is certainly questionable whether there has been any evolutionary change within the Soviet Union that has radically altered her concept of the outside world and her attitude towards it. She is still a totalitarian state, she has never neglected her military forces, and, while I have no figures nor any basis for making this statement, I think it is true that the military power of the twenty-two divisions in East Germany is considerably greater now in 1967 than it was ten years ago. In addition to that, the Soviet Union is backed, nourished, and supported by an ideology which is taught in every institution in the Soviet Union from primary schools right up through the universities, the basic tenet of which is the hostility, ideologically, between a non-Communist system and a Communist system. In fact, Khrushchev, at the time when he was so busily propagating the idea of peaceful coexistence —a phrase which, incidentally, was originated by Trotsky in 1921—made specific exception for the ideological field. He said that in the ideological field there can be no truce, there can be no compromise, there can be no peace. Now I am convinced that someday this will change, but it has not yet.

Let us look at the future of NATO. There are fourteen members of NATO, still as solid as ever in support of the institutions that have been set up under the treaty in anticipation of and preparation for a possible attack from the east. France has left that association but still remains a member of the Alliance. Certainly one of the factors which will affect a great many of the countries involved—and I would like to emphasize here that they are all virtually democratic countries where public opinion plays a great part in the determination of policy—is that if the Soviet Union continues the course it has been following for the last four and one-half years, of making no trouble for its neighbors and allowing its former satellite countries greater leeway in their international behavior, then it is going to be harder and harder to get the necessary monies voted in the various parliaments to sustain what, from a military point of view, we would regard as a reasonable insurance against a Soviet attack.

I do not predict what would be the attitude of the United States in those conditions, but I think that the world of Europe has, to some extent, entered a new phase of its history. Everything is a little bit unfrozen. The cold war is not so cold as it was, there is much more broken-field running, and the lines are not drawn up quite as tightly as they have been in the past. I think that we are coming into a new period in regard to NATO—the end, as it were, of a phase, on which we as citizens of the United States can look with considerable pride. It has been enormously successful, the period of NATO. The eighteen years of its existence, as I said earlier, have seen no war, no attack, no loss of territory, but instead freedom and prosperity ensconced on the Continent of Europe. This, I think, is something to take pride in and to be greatly heartened about. And I am convinced that the United States has learned its lesson of two world wars and will not be disposed to slide back into isolationism and just let the rest of the world go hang.

But one of the problems that is going to be with us for the future in regard to Europe is the size and power of the United States in relation to any given European country. In fact, this is one of the reasons why the United

States, practically ever since the end of the war and certainly since the time of the Marshall Plan, has been in favor of the unification of Western Europe. We have recognized that we are not participants in this process and we cannot force it. It would be very unwise to try to force it, but wherever we could we have given it an expression of our approval.

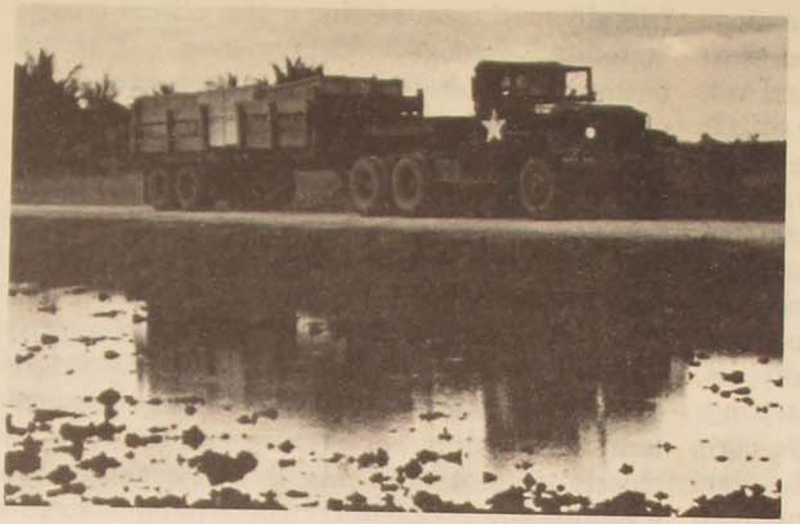
It seems to me there are three reasons for this U.S. policy toward European unification. One is that a united Europe would be able to contribute much more toward its own security than could individual nations. Secondly, it would have provided a comfortable setting into which West Germany—and we were certainly hopeful in the early days after the war that it would eventually be all of Germany—could be fitted, one that would insure possibly the best guarantee against any revival of extreme German nationalism or militancy of the kind that we have so tragically seen in the past. The third reason, which seems to me to be a very valid one, is that unification of Europe would create an entity roughly approximate to the United States in power, in financial and economic strength; composed of nations sharing in general the same philosophy, the same basic religion, and the same general idea of the relationship of the individual to the state. This union would be much easier for us to deal with, because as it now stands it is very difficult for the United States to have really very good relations with an individual European country. If we are too friendly with one of them, the others charge "satellite," "stooge," "dependency." It is extremely difficult to work out genuinely harmonious relations when the disparity in size is so great as it is. For example, we are a nation with, I think, a population of 200,000,000 this year and a gross national product of 740 billion dollars a year. England, probably the nearest comparable European country, has about 53 or 54 million population and a gross national product of somewhere in the neighborhood of 125 to 150 billion dollars (equivalent). The difference between the two is clearly evident. And this, as I say, will create a continuing problem for the United States in regard to Europe.

I would like to close with one main thought: that we all, or most of us, directly or remotely, came from Europe and that there is a strong spiritual affinity between the United States and Europe. Besides that, we have powerful material incentives to continue our involvement in the security of Europe. This relationship will change and evolve as events develop, but I think basically the principle that Europe's fate is in part the fate of the United States—and we would hope reciprocally—is deeply embedded in the consciousness of the American people. And I for one most certainly hope it will continue to be so.

Paris, France

SPECIAL EXPRESS

Lieutenant Colonel Ruskin M. Bland



WHEN a bomb screams down to explode on Viet Cong insurgents, it is traveling the last few thousand feet of a 10,000-mile journey. The pilot who releases the bomb finishes a job that began at the Ogden Air Materiel Area (OOAMA), Hill AFB, Utah, months before and involved thousands of man-hours of work. The destruction of the enemy position below is the payoff of one of the most complicated and challenging logistics efforts in history.

The bomb, along with thousands of its "relatives," was delivered by the use of a new concept in logistics, "Special Express." It was a new concept because never before has the American military had to maintain a supply line of such awesome length—over 10,000 miles.

If logistics was a problem in our Vietnam involvement before the military buildup in 1965, it became a real dilemma for the planners when the intensification of our involvement assumed the proportions of war. Port handling and discharge facilities in both the Philippines and the Republic of Vietnam were already overloaded. Soon these facilities became saturated, with resultant long delays that could not be tolerated.

Logistics experts became aware of the need for a more efficient supply system in 1964. At that time the Air Force had only three A-1E Skyraider squadrons and a few B-57s deployed in Vietnam. In the fall of that year the supply system was under heavy strain to meet the logistics needs of even this token force.

The Air Force Logistics Command's Ogden Air Materiel Area has the responsibility of logistics support for airmunitions. OOAMA acquires the airmunitions bound for Southeast Asia.

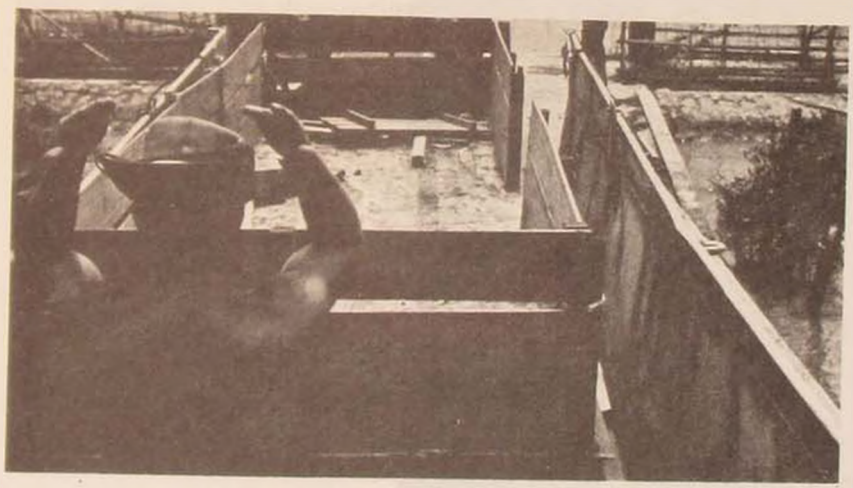
The supply line stretched from California to Clark Air Base in the Philippines to depots in Vietnam. Commercial transport ships under contract to Military Sea Transportation Service (MSTS) hauled the explosives. Supplies had to be unloaded at Subic Bay in the Philippines and trucked to a

After an ocean voyage aboard one of AFLC's 15 fast transports, 750-pound bombs will be armed and air-delivered to the Viet Cong, compliments of Special Express. The 10,000-mile pipeline now takes weeks instead of months. Ships are loaded to serve as floating warehouses at their destination.

storage site at Clark. To transport them to depots near the area of conflict in Vietnam as needed, Clark personnel had to truck them back to Subic Bay and load them onto ships, which, of course, took precious time.

Logistics planners hoped to keep a 30-day supply level at forward operating bases in Vietnam and a 120-day backup supply level at Clark AB. The average time required to replenish the munitions depot at Clark was 90 days, while resupply time from Clark to Vietnam was 24 to 35 days. The following is a breakdown of pipeline segments:

Order and shipment to ConUS water ports	30 days
ConUS port hold time, loading, shipments in transit	45 days
Discharge at Subic, movement to Clark	15 days
On hand stocks at Clark	120 days
Average resupply time, Clark to Vietnam	30 days
Forward operating base stock levels	30 days
Total pipeline time	270 days



To save one handling, an empty trailer goes aboard a landing craft preparatory to receiving a load from a transport waiting in the middle of the Saigon River. . . . Personnel transfer air-munitions from shipboard to the landing craft. On reaching shore, the trailer will be hitched to a truck or tractor for the overland part of its journey.

In Saigon's outer harbor, 500-pound bombs are lowered from a Special Express transport onto a semitrailer parked in a landing craft. . . . While one Air Force man acts as boat master, others keep armed watch for any hostile activity as the craft moves up inland waterways.

When munitions ships finally chugged into Vietnamese harbors, the problems were not over. Supplies for Tan Son Nhut and Bien Hoa bases were unloaded near Saigon, because of their proximity. The munitions had to be unloaded at Nha Be, the explosives discharge area 10 miles southeast of Saigon on the Saigon River.

The LST transport ships hauling the munitions had to be anchored in the middle of the river. The munitions were loaded onto barges, which were pushed to shore by tugboats and guarded by light gunboats. Only two tugboats were available, so barges often had to wait up to 40 days to be unloaded. In late 1964 it was not unusual to see 20 or 30 barges waiting impatiently for the tugs and gunboats.

Storage of munitions was also a critical problem. Available real estate for storing explosives was extremely limited in Vietnam. Safety criteria for quantity/distance often had to be waived in order to achieve maximum storage.

In short, all these factors added up to a disturbing situation: the 30-day stock level standard was impossible to achieve.

Logisticians realized that shortcuts must be taken in order to increase the availability level of supplies. After studying the problem, they formulated a system involving new concepts in logistics support, namely, "Special Express."

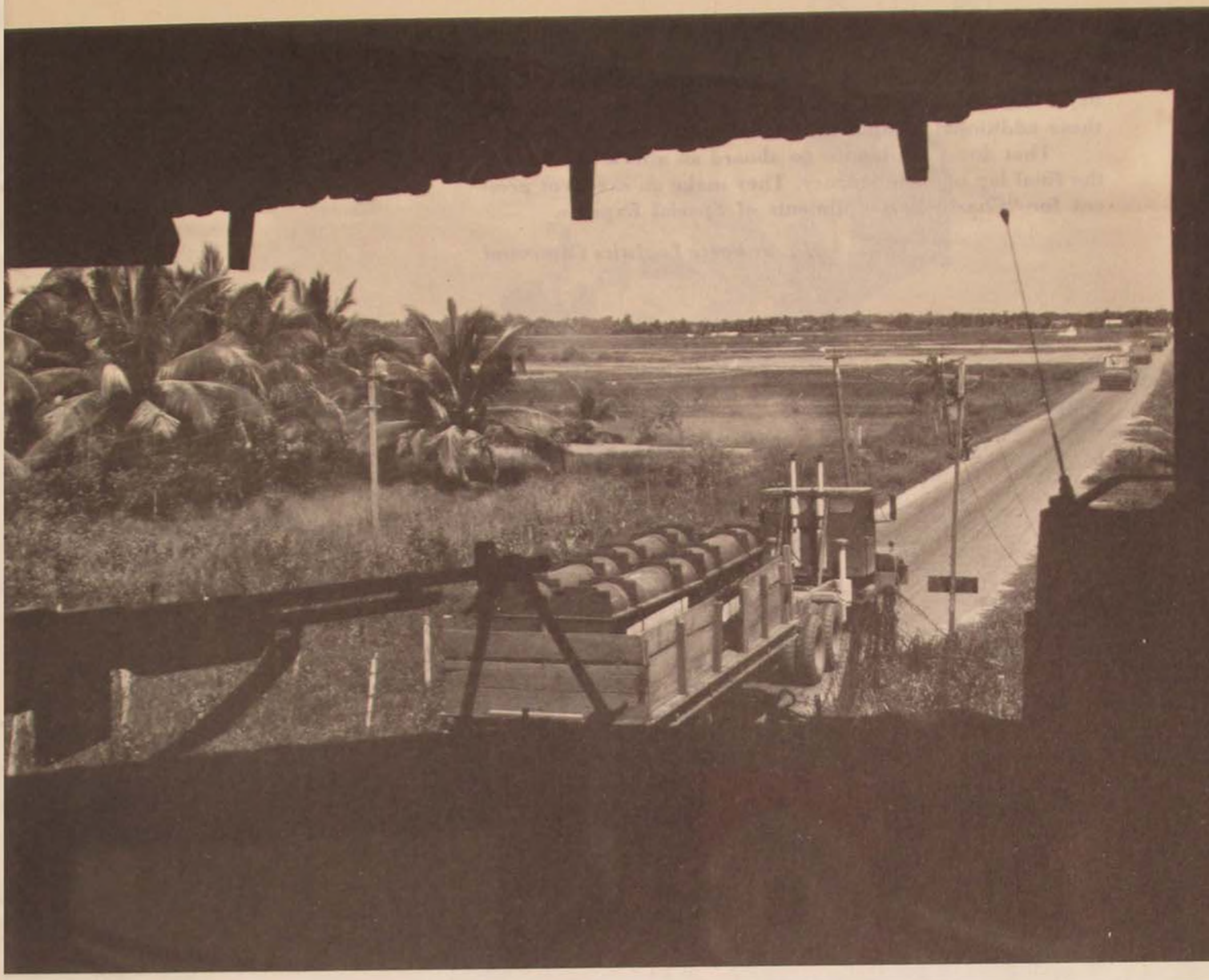
Special Express ships still sail from Concord Naval Weapons Station, California, to Subic Bay, but they stay there only one day to take on water and fuel. Instead of unloading their cargo, they sail on to the coast of Vietnam, where they serve as "floating warehouses." Total time from California to Vietnam—23 days.

The transports carry a wide range of supplies, stored in warehouse fashion. This enables selective discharge of any item at any port. With this capability, the Thirteenth Air Force and Seventh Air Force can direct movement of the ships based on a day-to-day analysis of the supply needs of each base. This flexibility eliminates the necessity for a back-up storage area at Clark and also makes large, vulnerable depots near field bases unnecessary.

When the ships reach the Vietnamese coastline, they are under the direct control of the Commander in Chief, Pacific Air Forces (CINCPACAF).

Naval LCM (landing craft medium) transports, manned by USAF personnel, unload the large transport and take the cargo to shore. Since the LCM's are self-propelled, no tugs are needed. At Cat Lai, a few miles south of Saigon, a concrete ramp once used to service French seaplanes extends into the river. The ramp has proven ideal for unloading the LCM's, which are capable of beaching. An ingenious idea has speeded up the unloading process considerably: a 25-foot trailer is placed in the well deck of each LCM, munitions are loaded from the ship into the trailer, and when the vessel crawls onto the ramp a truck or tractor is backed into place, and the trailer is hitched onto it. The munitions are then hauled in truck convoys, protected by armed Air Police, to the base airmunitions depots.

Landing craft and truck align with each other at ramp, and the loaded trailer gets hitched onto the truck. . . . A column of trucks moves along a highway some 15 miles northeast of Saigon. . . . A truck convoy (right) rolls past a guard post on the road from Cat Lai to Bien Hoa, one of the air bases that Special Express keeps resupplied with airmunitions.

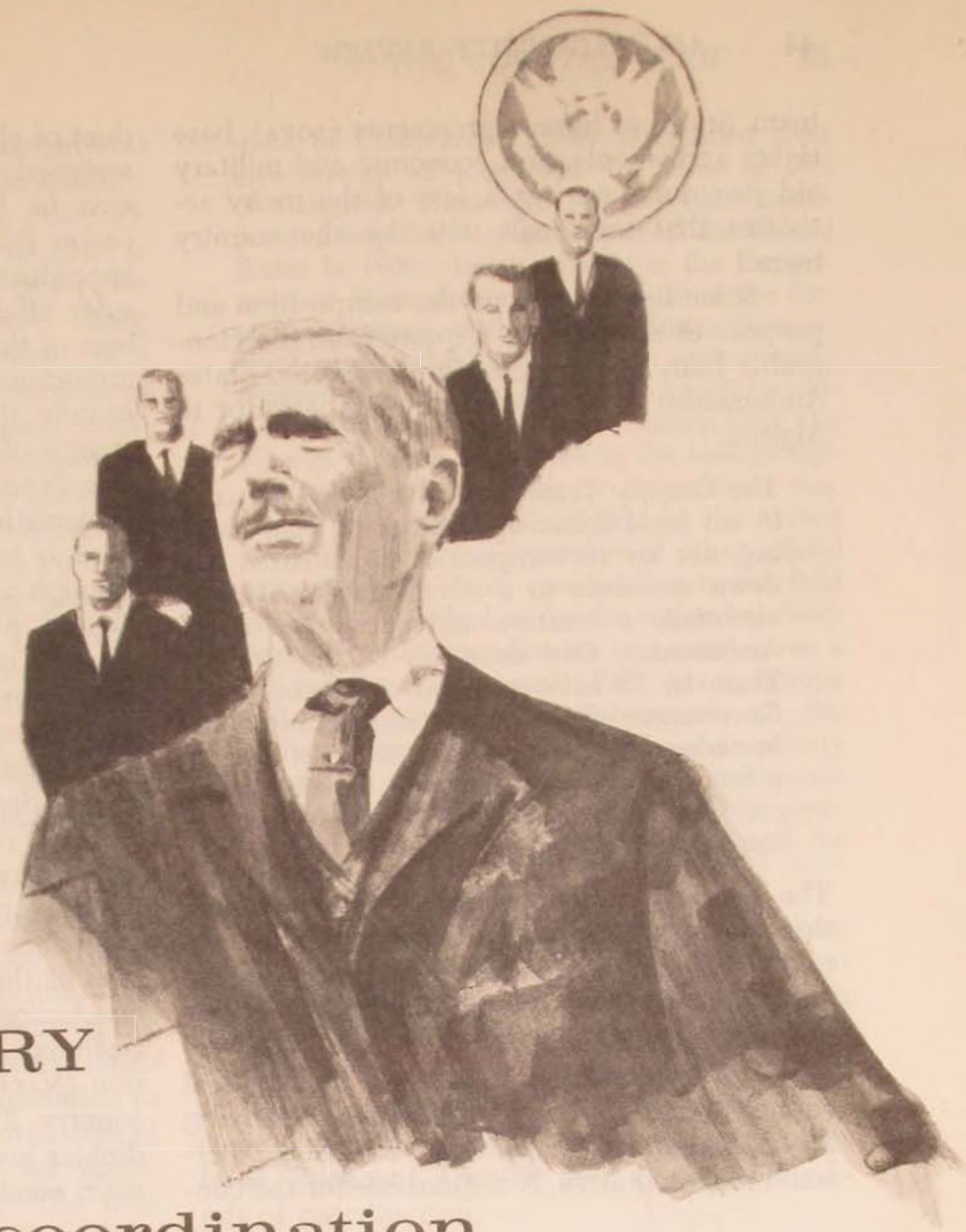


The fuses and wires to put the stinger in the bombs arrive at bases in Vietnam via C-141 direct from Ogden AMA, Hill AFB, Utah.

The finishing touch to this speedy process was added by the use of C-141s and C-130s to fly fuses, fins, and arming wire to Vietnam ahead of the bombs from OOAMA. Each day a big transport plane touches down at a base, carrying these additional components necessary to arm the bombs.

That done, the bombs go aboard an attack aircraft for the final lap of their journey. They make an excellent present for "Charlie"—compliments of Special Express.

Hq Air Force Logistics Command



THE COUNTRY TEAM—

a model for coordination

LIEUTENANT COLONEL ROSS E. HAMLIN

MUCH has been written in this journal and in others on the subjects of decision-making, systems analysis, cost effectiveness, and operations research—all terms that are part of the current military and management jargon. As nearly every article on the subject indicates, an important requisite to all these activities, if they are to produce, is coordination. And though we all pay lip service to coordination, making it work is another thing. It might help us learn how to make it work if we study an excellent model for coordination as it exists in the country team, another topic that has aroused considerable interest lately.

Although the term "country team" may be unfamiliar to some readers, it is probable that others will have had direct or indirect association with country teams. Of the 45,688 Americans attached to Department of State posts overseas as of April 1966, 45 percent (20,385) were from the Department of Defense. Of even greater significance is the fact that almost everyone who has been assigned to duty or has traveled in a foreign country has had contact with some activity of the country

team. Status of forces agreements (SOFA), base rights agreements, and economic and military aid programs are just a few of the many activities that are dealt with by the country team.

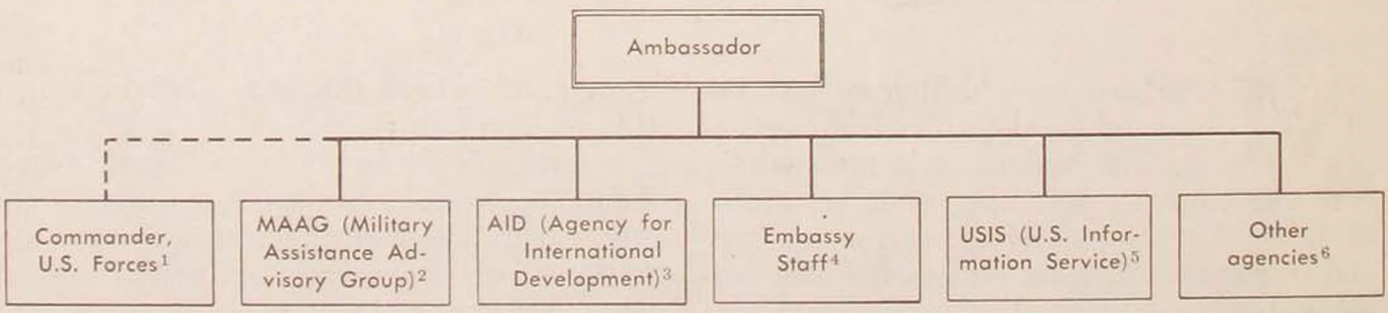
Some light is cast on the composition and purpose of the team by a quote from the Honorable John D. Jernegan, former United States Ambassador to Iraq and now Ambassador to Algeria:

> The Country Team is not mentioned by name in any legal document and has no legal standing, nor are its composition or functions laid down anywhere in a formal document. It is essentially a creature and a creation of the Ambassador. One definition of the Country Team is: "Whatever group of United States Government officers a particular American ambassador chooses to select to assist him in meeting his responsibilities to coordinate official American activities in his country of assignment."[1]

The primary function of the country team, then, is to advise the ambassador on important developments in the country and help to ensure coordination of all United States efforts in that country.

The organizational structure of a typical country team is shown in the accompanying chart. The ambassador, as the President's personal representative, is responsible for the conduct of all foreign affairs in the country where assigned. As chief of the U.S. diplomatic mission he has an embassy staff composed of career Foreign Service officers, including such specialists as the political, economic, and consular officers, who may or may not be members of the team depending on the nature and importance of their work. Another member is usually the public affairs officer, who is in charge of the United States Information Service (USIS), the field unit of the United States Information Agency (USIA). This agency's purpose is to inform peoples of foreign nations, through various communication techniques, of United States policies and objectives. The country representative of the Agency for International Development (AID) also is usually an integral team member. He is responsible for administering development loans and grants designed to assist educational, technical, and professional training and for furthering economic development programs. Administrators of other United States government agencies working in a country may be members of the team. Quite often the Department of Agriculture, Treasury Department, and National Aeronautics and Space Administration (NASA) have active programs in a foreign country. The senior officer of an agency coordinates his agency's plans through the country team mechanism, if the ambassador considers

Organizational Structure of a Country Team



1. Coordination only. Command authority direct to Unified Command.
2. Military Attaché (if no MAAG).
3. Economic assistance, technical help, educational advice, internal security assistance.
4. Normal diplomatic staff.
5. Public Affairs Officer.
6. Treasury Department, Agriculture Department, Atomic Energy Commission, National Aeronautics and Space Administration (NASA), etc.

the operations to be sufficiently important and substantive to warrant the team's attention.

If there is a Military Assistance Advisory Group (MAAG) or mission, normally its chief is the military member of the team; otherwise the military attaché would fill this role. There are also instances, as in South Vietnam, of a team with a complicated military structure. Then the United States area military commander works closely with the ambassador in the resolution of country problems, although his line of authority is through the Secretary of Defense. The Ambassador to South Vietnam and the Commander, United States Military Assistance Command in Vietnam (USMACV), as well as other members of the country team, meet at frequent intervals to discuss a wide range of United States government problems. In this very special case, a high-level coordinating group, the Mission Council, replaces the country team.

A look at the historical antecedents of the country team will better clarify its role. Large-scale problems of coordination in United States representation abroad did not arise until World War II, although some need for more coordination had been apparent prior to 1941. The first real problem of coordination in the field arose because of the maintenance of separate posts in foreign capitals for diplomatic and consular representation.[2] The 1924 amalgamation of the diplomatic and consular services into a single Foreign Service of the United States was a major step toward a consolidation of effort. In the late 1930s the combined offices, i.e., consular and diplomatic sections, began to function under a consolidated embassy. The advent of World War II accelerated the amalgamation process.

Other problems of coordination in the field arose from the presence in foreign countries of representatives of United States government agencies other than the Department of State. The Jackson Report of the Subcommittee on National Security Staffing and Operations for the 88th Congress presents the problem:

> In the course of time both the Department of Agriculture (1927) and the Department of Commerce (1930) established their own foreign services under the terms of acts of Congress. These two services were incorporated into the Foreign Service of the United States in 1939, thereby giving to the Department of State authority over most of the foreign operations of the United States Government, and to the Ambassador in each country supervisory authority over most American official representatives in that country. But the Foreign Service never took in the foreign representatives of the Treasury Department nor, of course, the attachés assigned by the Armed Services, nor a small number of other official representatives. How coordination in the field might have worked under the expanded functions of the Foreign Service was never given a full test, for the outbreak of the war in Europe and the subsequent involvements of the United States first in economic and military assistance programs and then as a belligerent in the war brought new and large-scale problems of coordination outside the ranks of the Foreign Service.[3]

During World War II, President Roosevelt conducted much of the nation's foreign affairs through personal correspondence with heads of foreign governments. In addition he used the device of a "special mission." Some of these missions were of a very short duration while others were on a semipermanent basis. President Truman used the same methods of coordination.

Special missions perform specialized war-related functions largely independent of the embassies, with direct channels to the White House and to the top officials in the host countries. The desired speed and freedom of action were thus achieved, but the ambassadors sometimes felt left out of important aspects of U.S. relations with countries to which they were accredited. The idea prevailed, however, that some complex and technical activities essential to the war effort could not have been conducted as well through the embassies.[4]

The magnitude of the problem of proper coordination was recognized by President Roosevelt, and several actions were taken to alleviate the situation. One of particular interest to the armed services was Executive Order 8352 in 1940, which amended certain Foreign

Service Regulations, including the section defining the duties of attachés. The revised regulations provided that the duties of attachés should be

> . . . such as may be prescribed for them by the heads of their respective departments, from whom they receive their instructions and to whom they shall report, but such duties shall be performed under the general supervision of the chief of mission.[5]

This directive also provided that in ceremonial matters attachés were to be subject to the direction of the chief of mission and responsible to him for their personal conduct.

Additional steps taken during the 1940–45 time period included establishment of the Board of Economic Warfare and its successor, the Foreign Economic Administration (FEA). In a limited way these new actions undertook to amalgamate the various assistance programs, though usually coordination of agencies outside the Department of State was ineffective.

This situation was highlighted in the postwar period by the enunciation of the Truman Doctrine in 1947 and the attendant economic and military assistance programs for Greece and Turkey. The programs for the two countries were different. Our Ambassador to Turkey was in charge of the program there. In Greece, however, there were, in effect, three separate United States missions—a diplomatic mission, an economic aid mission, and a military mission. The aggressive leadership of each mission chief in carrying out his own objectives sometimes led to cross-purposes, as, for instance, when the embassy might be doing everything possible to help the governing political group while the economic aid mission was trying to strengthen the opposition party.[6] After studying the problem of confusion on primacy of United States governmental agencies, the Hoover Commission recommended:

> The chief of each United States mission should be the responsible American spokesman for the area or country to which he is assigned. He should observe and counsel all United States activities therein and he should be responsible for administration of his mission.[7]

Implementation of the Hoover Commission recommendation was not immediate, and the problem of poor coordination was aggravated by an increased Military Assistance Program formulated in 1949 by President Truman. The administration of the Economic Cooperation Administration (ECA) and the expanded Military Assistance Program (MAP) finally brought about a situation wherein a senior military officer of general or flag rank would be chief of the Military Assistance Advisory Group and senior military adviser to the ambassador.

The rapid growth of our overseas programs and the division of authority among the various agencies over them (particularly the Department of State, the Economic Cooperation Administration, and the Department of Defense) seemed to call for new measures of coordination.[8] Accordingly, in 1951, General Lucius D. Clay, Special Assistant to the Director, Office of Defense Mobilization, sponsored a memorandum of understanding between the Department of Defense, the Department of State, and the Economic Cooperation Administration. This memorandum, sometimes referred to as the "Clay Paper," provided for the formation of a team of individuals representing the various United States agencies in a foreign country. Its general context suggested that the ambassador was responsible

> . . . for coordination, general direction, and leadership of the entire effort, for insuring broad United States foreign policy in relation to the country as reflected in all of the operations, and for providing coordinated recommendations to U.S. regional representatives and Washington.[9]

This, then, was the first really recognized concept similar to that of the country team. The trend was now toward focusing more and more responsibility on the ambassador. National security legislation between 1951 and 1954 required that our economic and military aid should be coordinated with our foreign policy. During President Eisenhower's tenure there was continued support for the country team concept. By Executive Order 10575 in

1954 he laid down very firm directives giving ambassadors full responsibility. In February 1960 Acting Secretary of State C. Douglas Dillon re-emphasized that an ambassador was responsible for directing and coordinating not only the normal Department of State responsibilities in a country but also the activities of all departments and agencies of the United States in that country. The overriding consideration was to ensure that all agencies spoke as one and that there would be unanimity toward the achievement of United States objectives.[10]

President Kennedy issued several directives and policy papers supporting the primacy of the ambassador. His letter of 29 May 1961 to the chiefs of missions was significant in furthering the country team concept:

> You are in charge of the entire United States Diplomatic Mission, and I shall expect you to supervise all of its operations. The Mission includes not only the personnel of the Department of State and the Foreign Service, but also the representatives of all other United States agencies which have programs or activities in the host country. I shall give you full support and backing in carrying out your assignments.

There is one exception to the command authority of the ambassador that is of particular interest to the military. It concerns the relationship of the commanding officer of United States forces stationed and operating in the ambassador's country of accreditation. In the same letter President Kennedy clarified this point:

> Now one word about your relations to the military. As you know, the United States Diplomatic Mission includes Service Attachés, Military Assistance Advisory Groups, and other military components attached to the Mission. *It does not, however, include United States military forces operating in the field where such forces are under the command of a United States area military commander.* The line of authority to these forces runs from me, to the Secretary of Defense, to the Joint Chiefs of Staff in Washington, and to the area commander in the field.
>
> Although this means that the chief of the American Diplomatic Mission is not in the line of military command, nevertheless, as Chief of Mission, you should work closely with the appropriate military commanders to assure the full exchange of information. *If it is your opinion that activities by the United States military forces may adversely affect our over-all relations with the people or government of . . . you should promptly discuss the matter with the military commander and, if necessary, request a decision by higher authority.* (Italics added.)

These instructions by President Kennedy have been reiterated by President Johnson and are the current guidelines for the country team operation.

With the historical and legal antecedents of this mechanism for coordinating and exchanging views now clear, let us turn to the basic purpose of the country team. It is not a device to make it easy for the ambassador to give orders. Its primary function is that of an advisory body, a group of people whose purpose is to pool their knowledge and ideas and promote cooperation. An important ancillary function is as an executive organ which, under the direction of the ambassador, serves to apportion tasks and see that they are completed. The team also participates extensively in planning the various U.S. operations related to the fulfillment of U.S. foreign policy objectives in the host country. The range of planning includes what kind of assistance, military or economic, how much, when, where, and how it will be administered. From the analyses and plans come policy recommendations that are made to the ambassador and, subject to his concurrence, are sent to Washington for final approval.

Thus, it is in the area of policy recommendations that the country team has been so useful and successful in establishing counterinsurgency programs for underdeveloped countries. Much of our national effort in foreign policy is being directed toward combating insurgency in the newly emerging nations and, for that matter, assisting some of the older nations in dealing with subversive ag-

gression. Establishing an effective counterinsurgency program involves a whole range of political, economic, psychosocial, and military actions. No one United States agency can act unilaterally. Rather it has to be an overall United States program that requires coordination and cooperation from all participants.

The greater the problems, the more need for mutual help and understanding. These sentiments are expressed by Ambassador Jernegan:

> During some of the worst times in Laos, officials worked together at all levels. Military men were used to conduct political discussions when they had the best opportunities or contacts; the MAAG, USIS and AID combined to support radio programs; AID and USIS men traveled together as teams through the hinterlands; available aircraft were used to meet the most pressing needs of all agencies regardless of their ownership of aircraft. Our then Ambassador, Winthrop Brown, has said: "The attitude of mind of the members of the Country Team and the heads of the different agency groups in Laos was such that it became quite natural for their subordinates to pool resources in this fashion, and the kind of cooperation which went on in the Country Team itself also found expression down the line in the respective agencies."[11]

The Honorable U. Alexis Johnson, in reflecting on his role when Ambassador to Thailand, said, "My own experience was that over a period of time, with conscientious people, it was possible to develop an effective Country Team and a sense of teamwork."[12]

Our final view on the function of a country team is expressed by former Ambassador to South Vietnam, now State Department Adviser to Commander, Air University, the Honorable Elbridge Durbrow. He states that the purpose of his country team meetings was to enable the entire group to engage in full and frank discussions, on the most sensitive and substantive problems, with a limited group of the highest representatives of the most important United States agencies in Vietnam. Because of the developing insurgency situation in Vietnam and the necessity of dealing primarily with sensitive matters, he included in his country team the Deputy Chief of Mission, the Chief of MAAG, and the Chief of the AID Mission. These high-ranking officers were shown the highest-classification information received by the Ambassador on a "need to know" basis in order that when the team met they could advise him with full knowledge of the facts. If the team needed to consider information or important events involving another agency, the head of that agency was invited to the meeting. Thus, through the high degree of coordination attained, the sum total of accomplishments by the country team concept is far greater than would be attained through individual effort.

Although not everyone in the armed services will have an opportunity to work directly with a country team, most will be influenced in some degree by the decisions and policy recommendations that emanate from the team effort. Certainly everyone can benefit from the lessons learned in observing this model of coordination in action.

Air Command and Staff College

Notes

1. John D. Jernegan, Ambassador to Algeria, "The Ambassador and the Country Team," *Readings in Military Employment—Counterinsurgency* (Maxwell AFB, Alabama: Air Command and Staff College, March 1966), p. 39.
2. U.S., Congress, Senate, Subcommittee on National Security Staffing and Operations, *The Ambassador and the Problems of Coordination*, 88th Cong., 1st Sess., 1963, p. 4. (Hereafter referred to as Jackson Report.)
3. *Ibid.*
4. *Ibid.*, p. 5.
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6. U. Alexis Johnson, Ambassador to Japan, "The Country Team in Operation," Industrial College of the Armed Forces Publication No. L64-66, pp. 6–7.
7. U.S., Congress, Senate, Report of the Commission on Organization of the Executive Branch of the Government, 1949.
8. Jackson Report, p. 14.
9. U.S., *Memorandum of Understanding between the Departments of State and Defense and the Economic Cooperation Administration*, as revised and circulated, 6 March 1951.
10. Jackson Report, p. 28.
11. Jernegan, p. 42.
12. Johnson, p. 13.

In My Opinion

THE CASE FOR COLD WAR GAMING IN THE MILITARY SERVICES

LIEUTENANT COLONEL ARTHUR W. BANISTER

THE armed services have long employed various forms of "war gaming" in analyzing the military problems that confront them. In fact, this particular type of analysis has been regarded as almost exclusively a military province, at least until after World War II. "Cold war gaming," on the other hand, represents a relatively new approach to problem solving within the military establishment. This technique, although largely developed within the civilian community, has already gained a foothold in several service organizations and appears to be gradually winning more general acceptance. In my view, cold war gaming appears especially promising for certain military teaching and training objectives and should be more widely utilized, particularly at the war college level. I shall briefly summarize some of the pertinent facts and arguments supporting this conviction.

the political game

The foundation for much of the present cold war gaming activity in the military service lies in the political game developed by the RAND Corporation in the mid-fifties and later refined at Massachusetts Institute of Technology (MIT). This game is also called the "crisis game," the "reality game," the "political-military exercise," and the "politico-military desk game" by various practitioners. For the purposes of this discussion, it will be called simply the "political game." The game may be summarized briefly as a manual, essentially "free" methodology, consisting of a control team and two or more player teams. Scenarios are furnished to start the play initially, with "move periods" and game time subsequently determined by the control team. Political moves at the national level are generally stressed, although military actions are

also permitted in most exercises. The main thrust of the game is the testing of preconceived strategies against intelligent opposition, in an environment of maximum realism. The principal advantage of this approach over more conventional analyses seems to be its ability to uncover unanticipated contingencies, with resulting pressure on players to "live with" the implications of their strategies. This artificial environment of living under stress seems to be particularly appropriate for the training of military officers and responsible government officials.

service school activities

Certain military service schools have adopted the political game or variations thereof for teaching and training purposes. These schools fall into two main categories: the service academies (undergraduate level) and the service war colleges (senior postgraduate level). The command and staff schools (intermediate postgraduate level) do not employ the political game, since they have traditionally been oriented more toward military skills than toward strategic or political analyses.

Of the service academies, both the Military Academy at West Point and the Air Force Academy at Colorado Springs have experimented with political games. The West Point experiment took place in 1960 in connection with a joint MIT-Columbia-West Point exercise. While apparently quite successful, the project was discontinued because of excessive demands on faculty time and has not been reinstated.

At the Air Force Academy political gaming has fared somewhat better. The principal game played there is called Strategy and Force Evaluation (SAFE), a methodology developed originally by RAND. Although the emphasis is on procurement of strategic weapon systems, the game does incorporate provisions for political maneuvering—arms control agreements, summit conferences, etc. Significantly, these political activities have been expanded in recent modifications to the game structure. A second methodology, called the statecraft game, was introduced in the fall of 1965. This simulation more closely approximates the political game than SAFE. Initial runs of the statecraft game were well received, and it has again been included during the 1966–67 academic year. A third political gaming methodology was tried on an experimental basis during academic year 1965–66 and became part of the regular curriculum during the spring 1967 semester. This game, called rural-COIN, was developed by Abt Associates under government contract and deals with counterinsurgency situations. As of this writing, it is anticipated that the rural-COIN game will continue to be employed for some time to come.

Of the service war colleges, the Naval War College at Newport is currently the most active in political gaming. The methodology used is called the strategic war game, but it closely resembles the RAND/MIT political game. It is designed to test policies and strategies developed by students during their course of study and is apparently quite successful. At any rate, it has become a regular part of the Naval War College curriculum and seems likely to remain so.

The Industrial College of the Armed Forces (ICAF) is experimenting with a computerized cold war gaming activity as part of its curriculum. The experiment revolves around use of the cold war model called TEMPER (for Technological, Economic, Military, and Political Evaluation Routine), developed by the Raytheon Company under the auspices of the Joint War Games Agency (JWGA). This methodology is rather complex and will not be described in detail here. It is fully automated and extremely broad in scope, in that it attempts to simulate the major elements of world conflict over periods ranging up to ten years. This was clearly quite an undertaking and required that a number of simplifying assumptions and aggregations be made. As a result, the model was considered unsuitable for operational problem solving, but it was successfully adapted by ICAF for instructional purposes. The TEMPER methodology was first incorporated into the ICAF curriculum in the 1965–66 academic year and was retained as part of the 1966–67 program. What will hap-

pen in future years is of course conjectural, but it seems likely that some form of cold war gaming will be practiced at ICAF for some time to come.

Political gaming at the other war colleges can only be described as minimal at best. The Air War College experimented briefly with the technique during academic year 1964–65 but abandoned it when the curriculum was reorganized the following year. Whether it will reappear in the near future is problematical. The Army War College, although recipient of several fine lectures by noted political gamers, has not seen fit to incorporate this device into the curriculum. An attempt was made to develop an all-encompassing strategic game methodology in 1959–60, but the goal was a bit too ambitious, and the project was dropped.

Joint War Games Agency

In contrast to political gaming for educational purposes, which is decentralized in various service schools, cold war gaming for policy analysis is concentrated almost exclusively in the Joint War Games Agency under the Joint Chiefs of Staff. This is no accident, since cold war gaming must encompass many considerations that are not the exclusive concern of any one service (or any one agency of government, for that matter). Thus, gaming for policy analysis must take place at a level which can provide the many diverse inputs necessary and also command respect when game results are published. The Joint War Games Agency seems to meet these requirements very nicely.

JWGA is organized into three divisions, the Cold War Division of which addresses political gaming and related activities. This division is further subdivided into two branches: the Politico-Military Branch is concerned specifically with manual political games of the RAND/MIT variety, while the Concepts and Developments Branch deals with the broader issues of international relations and technologies affecting national strategy. Both branches coordinate in sponsoring and supervising actual political games. These games are similar in format to those played at MIT, with one principal difference: the addition, when appropriate, of Action Teams and Senior Teams. Since the players in the JWGA games are frequently high-level military and civilian officials, it was found useful to create Action Teams (intermediate-level players) to perform most of the gaming mechanics and to present short daily briefings to the Senior Teams (high-level players). This device allows top officials to contribute their thinking to game problems without demanding more time than they can reasonably afford. Details of game results unfortunately are classified, but the technique seems to be well regarded by most players. Since the games have been conducted for several years and are still continuing, one must assume that the effort is considered useful for planning and policy analysis.

gaming for teaching and training

If use of political gaming for teaching and training within the military establishment is to be expanded, it seems clear that the war colleges, rather than the service academies, should receive most of the emphasis. While students at the latter institutions would undoubtedly find gaming stimulating and useful for testing theoretical concepts, it is doubtful that many of the lessons learned would survive the long years between graduation and the assumption of high command. Students at the war colleges, however, may expect appointment to key positions shortly after graduation. Furthermore, one of the principal objectives of war college training is to give the student officer an appreciation of the interrelationship between political and military considerations, a purpose for which the political game is admirably suited. In support of this view, Lincoln P. Bloomfield, one of the country's most experienced political gaming practitioners, has stated:

> It is hard to think of a better short-run device for the military officer who with increasing rank will face growing involvement in diplomatic situations, an involvement for which his academy training, his years with the troops or the fleet, his correspondence courses and his

professional readings have inadequately prepared him.

Political gaming can be very expensive in terms of time, manpower, and money to organize on any substantial scale. On the other hand it can be and has been done for virtually nothing, requiring only willing and capable participants. Among military organizations, the war colleges would appear to possess the necessary environment and expertise for this type of activity to a greater extent than most others. War college faculties and student bodies certainly represent a concentration of high-caliber manpower difficult to assemble under normal operating conditions.

It is significant that most of these senior military schools currently include a war game of some sort in their programs. Perhaps a political game could be substituted—or, better still, employed as a final exercise to test national strategies in situations where military strength is used primarily as a bargaining device rather than directly as an instrument of national power. After all, the contemporary officer is taught that armed forces are better used to deter wars than to fight them, but he seldom gets a chance to practice this philosophy. What better place to do so than at a war college, the last formal professional school of his career?

IN SUMMARY, it seems reasonable to say that cold war gaming has gained a fair amount of respectability among military circles in the last five or six years but has not yet been universally endorsed. At the operational level, the Joint War Games Agency seems to be proceeding at a sensible pace, primarily in utilizing existing techniques and to a lesser degree in encouraging the development of new ones. However, political gaming for teaching and training in military service schools is uneven at best and could probably be exploited more fully than at present. Substantial benefits could no doubt accrue from more general use of cold war gaming methodologies at the war college level, where senior students must prepare themselves for the politico-military environment in which they will soon serve.

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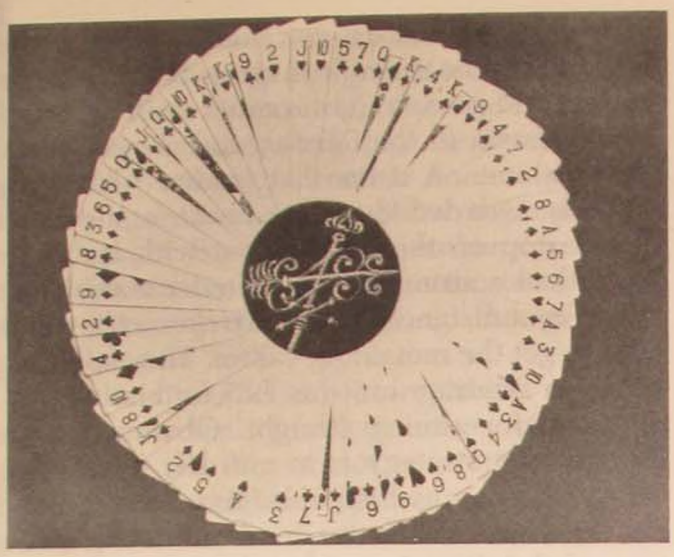

DECISION THEORY AND WEATHER FORECASTS

A UNION WITH PROMISE

MAJOR FRANK P. SCRUGGS, JR.

AN adaptation of a popular advertising slogan might be stated like this: "Weathermen try harder." Despite the effort, better weather forecasts are difficult to get because of such chronic problems as too few weather observations and the gaps in scientific knowledge. Since these difficulties are well known and may sometimes be gleaned from the muttering of frustrated weathermen, enough has already been said about them. Instead, this article advances ideas for getting more effective weather service from *present* weather forecasting skill.

The proposal, which stems from elementary decision theory, is based on three interlocking procedures for weathermen to follow: express weather forecasts in probability terms; know how weather affects operations; and, through decision-making aids, use the first two steps to recommend a best choice to the decision-maker. Although each step is distinct and complex, there is no need to treat each step separately in this article. Instead, the proposal is developed through these topics: background—how weather forecasts are presently stated; decision-making under risk —what it means, two examples, and problems of application; and, finally, possible changes in weather services—implications for the Air Force.

background

Linear programming and the theory of games are well-known decision-making aids. Perhaps less well known is the work of some meteorologists in using decision theory to improve the usefulness of weather forecasts. These meteorologists think that better use of present weather forecasting skill will enhance the reliability of weather service and contribute to sound operational decisions. This idea can be appreciated better by first reviewing present practices.

At present, Air Force weather forecasters generally provide categorical statements of predicted weather, e.g., "Rain this afternoon, clearing tonight." The forecaster often keeps this additional thought to himself: "Although there are several ways the atmosphere may behave, I'll forecast this one because it has better than a 50 percent chance of being correct." This practice can deprive the customer of a better understanding of what may happen. For example, whether the probability of rain ending is 90 or 51 percent could make a great deal of difference to some rain-sensitive operations. But such information is known only when volunteered by the forecaster or when drawn out under skillful questioning by the operator.

On the other hand, operators may not be

fully aware of how weather affects their operation. Such clichés as "Flying safety is paramount" do not adequately define the need for weather service. Unless the operator knows how weather affects his operation, he is unable to profit fully from available weather service; i.e., even if provided a complete statement of weather probabilities, some operators may not know enough about their operation to make the best decision.

This brief account of today's practices is a starting point for understanding how improvements might be made. Emphasis now shifts to the ideas being advocated.

decision-making under risk

This heading clearly means that the operator acts on the basis of weather forecasts that are not 100 percent reliable and hence there is risk in making a decision based on an imperfect forecast. The central theme, then, is to minimize the risk to the operator. To illustrate, consider the strategies and possible outcomes facing a golfing "duffer." This example, which uses only expected value, is deliberately simplified. The scene: first tee and narrow fairway, bounded on the right by a deep ditch and a dense rough on the left. Our frustrated, right-handed duffer frequently imparts a large "slice" to his drive. His problem is clear—Where should he aim his drive? The problem is expressed in the accompanying table.

Possible Strategies	*Possible Outcomes*		
	Ball hooks (0.05)	Ball straight (0.20)	Ball slices (0.75)
Aim left	3	6	8
Aim straight	6	10	1
Abandon game	This strategy is unacceptable.		

The probability of each outcome is in parentheses; these probabilities are analogous to a probabilistic weather forecast because a probability is assigned to each possible outcome. Arbitrary values of satisfaction or utility are entered in the table. These values are subjective but logical. For example, a drive that is aimed straight and goes straight is rated as 10 because it will remain in the fairway and should have good distance. A drive that is aimed left and slices is awarded 8 points because the ball should stop on the fairway but with less distance than a straight drive. Similar considerations about distance, penalty strokes, etc., were used to get the remaining values. The expected value, in arbitrary units, is 7.35 for aiming left and 3.05 for aiming straight. Obviously, the duffer's best strategy is to aim left if he uses expected value as his guide. But he still aims his drive under risk, for he is not completely sure of the direction of his drive.

In this example either a categorical or a probabilistic prediction would prompt the duffer to aim left. But suppose on the eighteenth tee the match may be won by a long, straight drive. If the duffer relies solely on a categorical outlook, he may lose his chance to win. On the other hand, he may assign such a high value to a straight drive that his best strategy is changed to aiming straight even though he still has only a 20 percent chance of hitting a straight drive. Hopefully, this example shows what decision-making under risk is about:

(a) Choose the best strategy for the situation at hand by considering the consequences and the probability of the consequences.

(b) Realize that the next decision may be incorrect although in the long run the decision-maker should maximize his gains or minimize his losses.

Although weather-sensitive operational problems may be approached in a similar manner, the methods are more refined and complex. As expected, situations involving several strategies and outcomes are harder to solve and, apparently, less well developed than the case of only two strategies and two outcomes.[1,2,3] Yet these methods still offer operators a means for choosing optimum strategies. Moreover, further developments in technique may make solutions to the multiple strategy-outcome problem as easy and useful as the two-strategy-outcome case. Available methods of the latter, simpler case can indicate whether available weather forecasting skill can help the operator or

whether an alternative decision, such as always protecting against a hazardous event, is better.[4] More important, the methods can show how existing skill may be used to improve the value of weather forecasts. And, finally, analysis can show how the operator would profit from perfect weather forecasts; this information can guide meteorologists to study those problems offering the greatest potential gain to the operator.

In a hypothetical example of a two-strategy-outcome problem, the operator's problem is whether or not to protect aircraft from severe weather. The example supports a key point: if the operator takes protective action only when the probability of an event exceeds a critical value, the value of the forecasts changes from unprofitable to profitable.

The setting is a small air base harboring nine aircraft. A safe refuge base may be reached in 30 minutes' flying time. Any required readiness posture may be maintained at the safe-haven base. The flying training program is on schedule, so there is no intangible benefit in evacuating the aircraft. These additional assumptions are also needed:

(a) Experience shows that a particular degree of severe weather—say gusts to 65K and one-inch hail—will inflict damage of 0.1 percent of the cost of a single aircraft on one-ninth of the unprotected aircraft. If each aircraft is worth $3,844,000, damage of $3844 may be expected.

(b) Since the climatological frequency of severe weather is 4 percent, assume that forecasts of nonoccurrence and occurrence are issued with a frequency of 96 and 4 percent, respectively. Three views of forecaster skill are noted: forecasts of nonoccurrence are 98.5 percent correct; forecasts of occurrence are 62.5 percent accurate; and overall accuracy is 97 percent. Overall accuracy is a measure of the number of correct forecasts—of both nonoccurrence and occurrence—compared to the number issued. The assumptions about forecast skill are fairly realistic but are deliberately and slightly biased to show good forecast skill.

(c) The cost of evacuating and returning the nine aircraft is $3141, based on per diem costs of $14 per aircrew and flying-hour costs of $335 per aircraft. A likely damage loss of $3844 has already been noted. A comparison of these costs indicates that a decision to evacuate should be taken only when the probability of occurrence equals or exceeds 82 percent.[5] The peresent typical practice is for the forecaster to issue a warning if he believes there is more than a 50 percent chance of occurrence. But this practice requires the forecaster to be 98.6 percent accurate if he is to provide economically meaningful service to the operator.[6] Although forecast accuracy is 97 percent in this example, *available skill is inadequate to provide economically meaningful service.*

One final assumption is needed to complete this example: if the forecaster issues warnings only when the probability of occurrence appears greater than 82 percent, forecasts of occurrence and nonoccurrence will be issued with a frequency of 1.2 and 98.8 percent, respectively. Forecasts of nonoccurrence are 97.2 percent correct; forecasts of occurrence are 91.7 percent accurate. Overall accuracy remains constant at 97 percent. Using these assumptions and available techniques, four possible annual costs to the operator may be derived, as follows:[7]

(a) If perfect forecasts were available, the operator would pay about $45,800 to evacuate the aircraft only when necessary.

(b) If the operator evacuated only when the probability of occurrence exceeded 82 percent, annual costs would be approximately $54,500. The additional cost over that of acting on perfect forecasts is due to two factors: aircraft are sometimes evacuated unnecessarily, and aircraft may sustain damages from unpredicted occurrences of severe weather.

(c) If the operator never evacuated and always accepted damages, annual costs would average $56,150.

(d) If the operator evacuated whenever the probability of severe weather exceeded 50 percent, annual costs would be approximately $66,680.

A hypothetical example involving severe weather warning has been developed. Analysis revealed the costs to the operator for several situations, ranging from perfect knowl-

edge of future weather to present-day practices and limitations. The example indicates that the operator would save about $1650 per year if he acted only when the probability of an important weather event exceeded a value critical to his operation. Since each real-life situation depends on climatology, forecasting skill, and operational factors that will differ significantly from this example, the reader is cautioned not to apply this example to his operation.

Despite the promise of a better decision-making rationale, as advanced by this article, there are several important obstacles:

First, some operators may refuse to accept weather forecasts worded in probabilistic terms; they may insist that the forecaster say "It will rain" or "It won't rain." Unfortunately, this attitude makes the forecaster—not the operator—the decision-maker. Yet the same operator may willingly accept climatological data worded in probabilistic terms. Consider the loss of information if an operator is told that the climatological outlook of a site is VFR (visual flight rules) while the detailed facts are omitted: VFR—65 percent; IFR (instrument flight rules)—33 percent; below minimums—2 percent.

Second, assignment of awards and penalties for various strategies and outcomes can be troublesome. Recall the duffer. It is not too hard to assign dollar values to the possible outcome if the duffer has a wager on the game. If the duffer seeks only personal satisfaction from a well-executed shot, utility values may be assigned to indicate the personal value of a good drive.[8] The problem arises when the golfer tries to mix both monetary and utility values. Unless the relative importance of these two values can be defined, there may be no way to approach the problem. This difficulty would limit application of the proposed techniques. For example, a commander may be concerned about the costs of evacuating his aircraft because of an advancing typhoon. His problem could be compounded by operational aspects, such as the ability to maintain an assigned alert in support of a contingency plan. In such a case, application of rational decision-making aids would be extremely difficult, if not impossible. But for combat situations where concern for effectiveness dwarfs monetary considerations, numerical values with meaning for the commander could readily be substituted for cost values.

Third, neither Air Weather Service nor the units it serves have adequate experience in the methods. Moreover, the assignment of probabilities to all possible weather categories is a significant obstacle.

Fourth, the operator may have difficulty in sorting out the many facets of his operation, and unless he can do so, these techniques offer only limited help. It should be clear, too, that the successful application of the techniques requires a complete, frank dialogue between the meteorologist and the operator. Each has well-defined responsibilities.

A number of ideas have been presented. Rather than probe these in greater depth, I shall consider an application of these concepts in the next section.

possible changes in weather services—an outlook

The changes would be subtle but significant.

- Some customary forecasts might be withdrawn after the required evaluation. This evaluation could conceivably evolve to a process similar to that of validating manpower spaces; if the requisite forecast skill is unavailable, the validator would suggest an optimum strategy to the operator in lieu of routinely provided forecasts. Generally speaking, the remaining forecasts would result in significant savings or tangible benefits to weather-sensitive operations.

- In those cases where the techniques are not applicable, the customary service would still be provided. "Customary service" means weather forecasts without decision-making aids. The definition is also amplified to mean use of probabilistic forecasts whenever the operator is agreeable.

- Meteorologists would have an additional means of identifying those problems for which better forecasting skill would be most helpful to the operator.

TWO BASIC IDEAS have been advanced. First, the present-day use of weather forecasts may not always result in advantages to the operator. Indeed, use of some forecasts may hinder the operation. Second, available "off-the-shelf" techniques can enhance the application of weather forecasts to many operational problems, resulting in economies and greater effectiveness.

This hopeful outlook will require considerable effort to be achieved, yet the overall result would be as meaningful as a significant increase in weather forecasting skill. The Air Force could realize two benefits for some weather-sensitive operations: increased combat effectiveness and lower operational costs. Although the Air Weather Service is interested in the possibilities, means of applying these techniques must be evolved. This will take time. Meanwhile, weathermen will try harder.

Hq Air Weather Service, MAC

Notes

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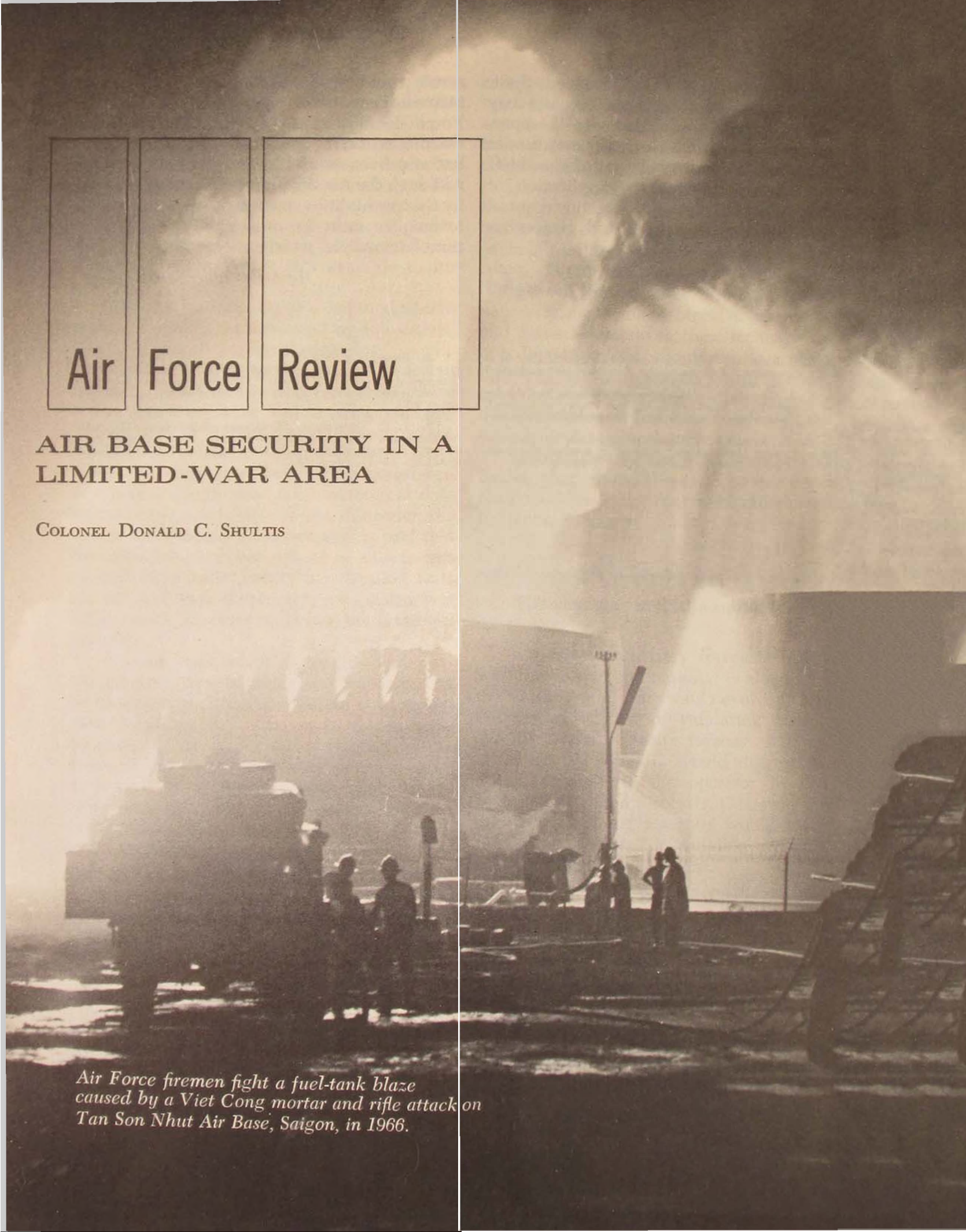
Air Force Review

AIR BASE SECURITY IN A LIMITED-WAR AREA

COLONEL DONALD C. SHULTIS



Air Force firemen fight a fuel-tank blaze caused by a Viet Cong mortar and rifle attack on Tan Son Nhut Air Base, Saigon, in 1966.

TO SAY that a commander must be seriously concerned with the security of his forces is perhaps to overstate the obvious. The need to maintain proper security of one's base is an accepted principle of war. At the same time, in common with the other principles, its proper application will depend upon a number of variables in any given situation. A commander is always faced with the problem of determining not only how much security he needs and how to provide it but also how much he can afford. Recognizing that the resources for any particular job are always going to be limited and realizing, too, that certain eventualities must be guarded against at all costs, we must devise a system of operation, within available resources, that will permit necessary operational flexibility but still cut the inherent risk factor to a minimum. In any event, we cannot operate aircraft without reasonably secure bases.

Recent Air Force operations in an insurgency environment have brought this general problem into sharp focus. Under normal peacetime conditions, most of the more extreme security contingencies could be relegated to the status of planning factors for wartime guidance, with the comfortable assurance that they would probably remain in this category. But when we begin locating Air Force resources in forward operating areas, in a hostile environment, the situation changes drastically. Now the remote possibilities become distinct probabilities. Sabotage, infiltration, terrorism, espionage, attack by sapper bands at night, attack by surreptitiously emplaced guerrilla-served mortars and other artillery—all these become very real and ever present considerations, as to both probability and consequence. They are disproportionately expensive to operators of multimillion-dollar aircraft.

Under such conditions, certain axiomatic principles that might normally guide our actions are no longer applicable. In a conventional wartime situation, for example, one simply does not locate an air base for sustained operation within artillery or mortar range of known enemy forces. Basic common sense would define this as a completely untenable situation. But in an area where small—or even sizable—groups of insurgents can blend in with the local populace and exploit to the fullest their inherent advantages of surprise and mobility, any location may be potentially within range of an enemy attack at any time.

This, then, becomes the main security threat in an insurgency area—the constant possibility of attack from any direction, by groups of perhaps less than 100 individuals employing a variety of weapons, including mortars and recoilless rifles. It is a formidable threat to contemplate—so much so, in fact, that any approach to base security along conventional lines is a frustratingly inadequate one.

Some of the major considerations that have influenced Air Force security operations in Southeast Asia and that have posed knotty problems illustrate the general situational aspects.

To begin with, base security must be a joint effort, with external area defense responsibilities resting on friendly ground forces. Before a forward area base can begin full operation, there must be at least some degree of relative area stability in the situation. While USAF Security Police forces can, within their area of responsibility, maintain a surveillance, detection, and response capability adequate to cope with limited attack, the Air Force has neither the equipment, personnel, nor mission responsibility to develop a sizable ground defense capability against well-organized and -equipped ground forces. The Air Force cannot accept such responsibility without necessitating review and reassignment of roles and missions and all the related actions required.

The initial requirement, then, is for a coordinated, mutual defense effort which will ensure that supporting ground forces provide a reasonable degree of external protection. For example, a regular enemy force of battalion size should not be able to organize in the general vicinity, bring up necessary equipment, and move unopposed to the confines of the base. If this degree of assurance cannot be provided by external area surveillance, scouting, and defense capabilities, then an attempt at sustained base operations is likely to be unduly costly.

Assuming, then, the existence of the necessary area stability, with reasonable prospects that the situation will not deteriorate rapidly and seriously, the Air Force requirement becomes one of developing an effective surveillance and detection capability around our own perimeters; providing USAF Security Police forces with rapid, reliable methods of communication; insuring a strong and prompt response or reinforcement; and providing secondary backup USAF Security Police forces with a rapid mobilization and maneuver capability.

The strength of base Security Police forces, in terms of actual manpower, is not as important as are certain other basic requirements. The abilities to detect, maneuver, communicate, and deliver high-intensity small-arms fire, in coordination with aerial flare and fire support, are the essentials. The tactics of the defense, in other words, must concentrate on depriving the guerrilla of his main advantages—surprise, mobility, and speed of attack.

To design a USAF Security Police system to accomplish this job required some radical departures from our previous concepts and methods of operation. Air base security systems in the past have been concerned largely with protection of essential elements of our weapon systems, particularly alert aircraft, ready missiles, and nuclear weapons, rather than the entire base. This system was based on normal ZI operating conditions in a relatively secure rear area, with little threat of an armed attack directed against the base. The established system of security priorities was based upon the relative importance of resources required for carrying out the main wartime mission, which thus had to be kept in an assured state of readiness.

As can be seen, then, this system was not designed for continued operations in a hostile environment, where every element of the base personnel, warehouses, POL, aircraft, and ammunition are liable to attack and destruction. For such environmental conditions, a "whole base" protective concept was needed. Further complicating the situation was the fact that Security Police manning standards had been established for the limited, peacetime security mission. Of course, to protect only selected, high-priority resources required less strength than to protect entire installations.

Still another problem was inherent in the system of assigning and rotating individuals rather than units. This meant that operational security forces for a given base had to be built up under field conditions. The men came from a variety of command assignments, from bases with differing security systems and requirements, and thus the Commander of Security Police at the receiving installation was faced with the task of welding together all these individual assignees into a trained and coordinated unit, while carrying out full regular operations at the same time.

As a result of these experiences, the Directorate of Security Police, USAF (then the Directorate of Security and Law Enforcement), in July 1966 entered upon a one-year test project which was given the name "Safe Side." Essentially, Project Safe Side is the 1041st Security Police Squadron, a unit specially formed, trained, equipped, and deployed to accomplish the following tasks:

- Test and evaluate advanced security equipment, including intrusion detection, surveillance, and communications devices, as well as weapons and vehicles
- Evaluate Air Force Security Police training methods and requirements
- Provide operating experience to help determine how best to develop an improved security capability for Air Force installations
- Provide basic experience toward the development of security doctrine for operations in an insurgency or limited-war environment. This includes the possible establishment of specially trained and equipped units that would be immediately available to secure the emergency deployment of any Air Force resource.

While several of these objectives could be met only by establishment and field deployment of the special test unit, certain other desired answers could be found in the experiences and capabilities of Security Police units already in the field. This latter opportunity has not been

neglected. Changes in operational concepts and methods, as well as new types of equipment, have been introduced into Vietnam on a continuing basis as a result of operational experiences and demonstrated requirements. For instance, Air Force Security Police were among the first military units to be armed with the M-16 rifle, a small-caliber, high-velocity weapon which has demonstrated its worth so conclusively that it has since become the standard rifle for ground forces in Vietnam.

Coordination and control systems have been worked out, under field conditions, for the maximum effective coordination of aerial flare and fire support for ground security forces. Sentry dog patrol systems and methods of use have been adapted in a remarkably effective manner to meet the requirements of counterguerrilla operations. Special training courses for USAF Security Police personnel bound for Southeast Asia have also been established, with a flexible course of instruction which permits modification in line with continuing experience.

On the other hand, Project Safe Side provides a unique opportunity to test several concepts which have long been considered desirable but which could not be exercised because of previous limitations. For instance, the 1041st Squadron is the first Security Police squadron that has been formed, trained, and deployed as a unit. Its members, all volunteers, had nearly six months' experience working and training together as a team before they were deployed, still as a team, to a combat area. They could operate, immediately upon arrival, as a fully effective unit and will be returned to the States as such.

The personnel training that has been given to members of the 1041st transcends any previous Air Force Security Police training. As an example, for more than 20 members of the 225-man squadron, graduation from the Army Ranger School at Fort Benning, Georgia, was only a beginning. After graduation, it was these men who then took over the training and physical conditioning program for the rest of the personnel. The rigorous course of field training over the next four months at Schofield Barracks, Hawaii, included the handling and use of advanced electronics and communications equipment, qualification as experts with all types of hand and portable weapons, field defense and maneuver exercises, unarmed combat tactics, and individual physical conditioning.

One of the main objectives of Project Safe Side is to evaluate the application of advanced technology to items of security equipment. In the main, the individual policeman—civilian or military—continues to carry and use the same equipment that his predecessor used in the 1890's: a club, pistol, and whistle. For communications, the standard radio and telephone are still the two main standbys. And for most military purposes, the primary system for intrusion detection and prevention continues to be human surveillance over the standard barbed-wire-topped chain-link fence. While the rest of the Air Force has kept pace with the technological developments that have moved us rapidly into space, in the protection of our resources and in our ground security capability we remained, figuratively speaking, in the days of the open cockpit.

Operation Safe Side is now in its second phase: deployment to a combat area where the squadron will operate under actual field conditions. Of the success of the unit itself, there can be little doubt. Its men are superbly trained and equipped; little expense has been spared to provide them with the most advanced weapons, detection devices, and other security equipment. From this standpoint, then, there is no "test" involved, for it is a foregone conclusion that if all USAF Security Police units could be so trained and equipped, our general capability would improve tremendously.

What the test will resolve are questions concerning which types of equipment will prove to be most reliable and effective; whether additional special USAF Security Police units should be organized, trained, and equipped to provide a unit deployment capability to support contingency operations; what manning and equipment standards should be established for such units; what special training and equipment may be necessary for and

adaptable to all Air Force Security Police operations; and how basic security doctrine should be revised or expanded for application to counterinsurgency and limited-war conditions.

Results of Project Safe Side will be reviewed and evaluated by an Air Staff working group which has been formed expressly for that purpose. Based upon this review and evaluation, a decision will be made as to how the results and findings of the test will be applied Air Force-wide. The end result should be the formulation and adoption of a security system which will not only support but also—and even more important—permit the continuing accomplishment of the Air Force mission in areas where the threat of limited ground attack is an ever present possibility. In such an environment the outcome of air combat can depend on survivability on the ground. Helping to ensure our survivability is a main and continuing mission of the Air Force Security Police.

Hq United States Air Force

THE EFFECT OF AUTOMATION ON ORGANIZATION

LIEUTENANT COLONEL J. R. BROWN

WHAT CHANGES can we expect in organizational structure as a result of advancements in automatic data processing? Will the changes evolve slowly, or can we expect abrupt shift and compliance as a result of the rapid progress of ADP technology? Will there be any dilution of middle management functions or responsibilities as a result of these advancements? These questions are prompted by recent achievement in ADP technology and its effect on the development of information systems.

Sophisticated computer-communication links capable of transferring data (or summaries and analyses thereof) on a real-time or near real-time basis may well change our thinking concerning organizational structure. Two factors are basically responsible for this change. One is the total systems concept (input or data-base oriented) as opposed to the single information flow concept (output or report oriented). The other is the improvement in computer-communication links. The input-oriented systems incorporate a broad,

all-inclusive data base relevant to the system and allow for extraction of these data as usable information with varied output formats. The output or report-oriented systems are less flexible because the input is limited to that which appears in the output or report format. The improved computer-communication links facilitate the processing and transfer of data on a real-time* or near real-time basis. This allows for the movement of information from source or input to the successive management levels, thereby facilitating timely management action.

There are several approaches to the subject of automation and its effect on organization. One of the more elementary approaches concerns the assignment of programmers and systems analysts. Should they be assigned to the functional agencies generating the requirements for information, or should they be under the control of the agency responsible for data processing? Another approach concerns management of the data-processing functions. Should management be the responsibility of a separate agency reporting directly to the commander, or should the data-processing functions be decentralized to several user agencies? In the event of decentralization, data processing, including computers supporting single functions, would be placed under the control of several functional agencies. Other considerations bearing on the management of data processing include the degree of responsiveness required as well as other customer needs, computer capacity, cost of hardware and software, size and location of computers. Also to be considered are two different parochial interests: on one hand, those supporting computers serving a single function; and on the other, those favoring large-scale central processors that support integrated information systems and feature time-sharing, multiprocessing, etc. Still another approach concerns the possible change in organizational structure resulting from advancements in the design and development of information systems and the speed with which information is becoming available to any given level of management. This is primarily the area on which I wish to dwell, but in order to establish a common point of departure, some discussion is necessary concerning present alignment of ADP systems.

*Paralleling data processing with a physical process in such a fashion that the results of the data processing are immediately useful to the physical operation. Robert U. Head, *Real-Time Business Systems* (New York: Holt, Rinehart & Winston, Inc., 1966), p. 3.

automatic data processing

For management and control purposes, ADP systems are categorized as operations supporting, management supporting, or research and development supporting. Operations-supporting systems include command and control, intelligence, weather, etc. Management-supporting systems include personnel, maintenance and supply, financial, etc.

Systems integration. Presently we have both horizontal and vertical alignment of data-processing functions within the Air Force. An example of horizontal alignment is the major air command computer standardization program, whereby like computers are located at each major air command in support of the management data systems; another is the automated base supply system in which like computers serve the inventory management requirements at base level. Vertical alignment is typified by the intelligence data-handling system and the command and control systems, both categorized as operations-supporting data systems. These systems use computers that serve the intelligence and command and control functions at selected levels of command. Horizontal and vertical alignment applies to both the dedicated ADP systems and the mutually supporting or shared ADP systems. With the advent of the third-generation computers* and as we progress in our use of time-sharing, multiprocessing, and integrated data systems, we can foresee a possible merging of the horizontally and vertically aligned systems at the various management levels. The extent of this merger will depend largely on the considerations previously mentioned, on constraints due to the security classification of

*The more sophisticated computers possessing modularity to permit capacity increases or decreases, immediate-access storage, and remote input/output devices for on-line inquiry and file update.

data being processed, and on the amount of systems integration obtainable.

Before any integration of command and control systems, intelligence data-handling systems, and management-supporting data systems takes place, its feasibility must be demonstrated through detailed systems analysis and design. In this instance, we must establish the degree of systems integration obtainable and demonstrate its usefulness. The hardware technology and software capability are available; the problem is to determine the degree of integration obtainable without any systems degradation.

Data systems integration between the operations-supporting systems and the management-supporting systems appears to have some practical aspects. For example, the personnel system's combat crew subsystem and the maintenance system's aerospace vehicle and equipment status subsystems, both part of the management-supporting systems, and the command and control systems within the operations-supporting systems utilize certain source data common to both the major systems.

Systems integration within the two supporting data systems is in-being to a limited extent. Within the management-supporting systems the procurement, supply, and financial accounting systems are integrated at base level on the supply computer. Also, studies have been made by the Hq SAC Data Systems Requirements Panel to determine the practicality of greater integration of the intelligence data-handling system and the SAC operations system, both identified within the framework of operations-supporting systems. In this instance, certain data are common to both the intelligence function and the operations plans (SIOP/EWO) function.

Centralization. Systems integration may or may not prove to be practical; however, this should not deter efforts to study the feasibility of a single, large-scale central processor with multiprocessing and time-sharing features versus two or three central processors, depending upon the interrelationship of such systems as command and control and intelligence. One must also consider that several smaller-scale central processors might be as economical as a single large-scale processor and, in addition, might offer a degree of flexibility and backup not readily available with a single processor.

Centralization of data processing should result in a separate staff agency with responsibility for systems design, programming, and computer operations. This staff agency would not be a prime user of automated products and should operate as a director of information systems. However, if we retain the current alignment of management-supporting data systems, operations-supporting systems, and R&D-supporting systems, the present role for data-processing functions appears proper. One method of insuring a greater degree of control over the decentralized operation is through the use of a data systems requirements panel such as the one at Hq SAC. The panel is composed of senior officers representing the operators of the data-processing equipment and the major users of automated products. The panel does not infringe upon command or staff management prerogatives but complements normal staff action by exercising collective judgment and expertise on command-wide data-processing problems associated with new systems development, major system modifications, and hardware requirements.

effects on organization

Integrated data systems and large-scale central processors are changing the makeup and complexity of information systems. The real issue is the effect of the changing information systems upon organization. It is not so much who controls the systems analysts and programmers or who operates the data-processing center but what is happening or will happen to the structure of organization as a result of having information readily available at all levels of management. This article addresses itself more specifically to information systems incorporating, wherever practical, integrated data-processing and real-time features as well as data base orientation and inquiry techniques and their effect on organizational structure. It is apparent that most if not all routine functions of sorting, consolidat-

ing, and summarizing can be effectively and efficiently accomplished by the computer or its peripheral hardware. Optimum computer utilization, however, comes through the use of higher-level programming languages in performing the more sophisticated mathematical and analytical functions. This information is usually the result of advanced ADP systems design based on the desires and needs of management. We are already witnessing the effects of this advanced state of computer output. We are aware of the talent required to design the more sophisticated systems wherein the mass of detail data is processed into meaningful information. This, in turn, requires the exercise of exceptional talents in the portrayal and interpretation of meaningful management information.

We are observing a change in the mix of skills required to function effectively in this new and challenging ADP environment. We are witnessing more effective audit techniques and systems of checks and balances, resulting in more efficient and timely administrative action and executive control. It appears that more decisions can and will be made at higher management levels. It is at these levels that longer-range plans are formulated and that essential information is or will soon become readily available. In essence, the decision level appears to be moving up the chain of command.

Of primary concern is the development of senior executives at top management levels. The shape of the so-called top manager's "learning curve" is to a considerable extent affected by his vital middle management experience. Middle management, for the most part, is staying in step with advances in computer technology, and in so doing it is able to render valuable assistance to senior executives by defining their needs and by designing and implementing meaningful information systems.

The good or bad effect of real-time systems on middle management will depend on the resourcefulness and responsiveness of middle management itself. Real-time systems will not eliminate this level of management but may dilute its prerogatives if it fails to take timely management actions. With detail data available to all management levels, subordinate levels must be especially alert to their responsibilities lest they forfeit control to higher management. The mix of skills at the middle management level will change. This change will result in fewer lower-grade personnel, offset by an increase in higher-grade personnel. The higher skills are necessary for exploiting computer capabilities and developing more sophisticated information systems as well as for programming in the higher-level languages required to support these systems.

THE CHANGE in middle management may well be one of structure and composition, not dilution. Functional agencies that are involved in ADP systems development or the processing of data or that are the major users of the output of information systems will experience an accelerated change in the mix of skills required in support of these functions. With greater centralization of data-processing functions, we can expect a shift in responsibility for these functions. The greater impact will come, however, when and if there is a material change in the traditional line and staff organization. Such change may not be dynamic but instead may quite possibly be reflected by an evolutionary change in the middle management structure as a result of ever improving computer-communication links and information systems.

Hq Strategic Air Command

Books and Ideas

TALLYHO: TO THE AID OF THE RAF

AIR CHIEF MARSHAL SIR BASIL E. EMBRY, RAF (RET)

The great man abides by what is solid and eschews what is flimsy: dwells with the fruit and not with the flower.

Canon of Tao and its Manifestation

IN HIS latest book, *The Military Intellectuals in Britain, 1918-1939,* Robin Higham has briefly summarized the writing of some of the better-known British authors on military affairs and attempted to analyse the British contribution to air warfare. It is an ambitious task in a volume of about 250 pages and in my opinion is too superficial to be taken seriously by the student of strategy or military history. It contains a number of dogmatic statements that are open to challenge, too many half-truths and questionable deductions when dealing with the subject of air power to give the book more than passing interest.

The value of this book† lies primarily in bringing to light the vital importance of inter-service understanding and cooperation, particularly in politico-military affairs. Undoubtedly there was bitter rivalry among the three fighting services in Britain from 1919 to about 1941, and only the experience of war, the acid taste of military reverses, and the common sense of British commanders of the stature of Portal, Alanbrooke, Tedder, Montgomery, and

†Robin Higham, *The Military Intellectuals in Britain, 1918-1939* (New Brunswick, New Jersey: Rutgers University Press, 1966, $7.50), 267 pp.

Slim eradicated this malignant disease that was undermining the combined fighting efficiency of the British armed forces. The interservice harmony and understanding created during the Second World War has not only continued to the present day but gained in strength.

The same cannot be said about the fighting services of all NATO nations or perhaps of certain countries outside the Western alliance too. Indeed in 1953–55, when I was a NATO commander, I was so convinced that the internecine squabbling among the services of certain allies was undermining the efficiency of NATO that I wrote a paper on the subject for the Supreme Commander, after discussion with him.

Strained relations between services usually spring from misunderstanding and ignorance of each other's problems. Yet they rarely occur at the sharp end of affairs; it is way back from the scene of carnage and sacrifice that the battle is joined, and more so in peace than war. In the British services in pre-1939 days, the potion that promoted interservice strife was prepared and administered by those who held the purse strings. Combined service staffs, close personal relationships at the summit of affairs, and careful selection of service appointments would seem to be the antidote to interservice discord.

The author presents a sound argument for a government sponsoring civilian research into defence problems, along the lines of the RAND Corporation. The complexity of modern defence and the vital importance of obtaining the correct solutions to the associated problems, brought about by the advent of weapons of mass destruction and highly sophisticated weapon systems, lift defence (using the term in its widest sense) to a plane of importance hitherto unparalleled in the history of nations. For this reason defence should not be left exclusively in the hands of the professional soldier, sailor, and airman, although the service chiefs will and must carry the burden of responsibility for advising their political masters on defence policy and the methods of implementation.

Whilst the fighting services will always attract their share of first-class brains and highly dedicated personnel to their ranks, it is obviously wise, if not imperative, to cast the net beyond this field to find talent and brainpower to help solve some of the more complex problems of defence. An added advantage derived from such a policy is that a civilian organisation may approach the same problem quite differently from the services, and that is healthy.

In the United Kingdom great reliance has always been placed on the defence scientist to help solve specific problems, but there is no civilian organisation similar to the RAND Corporation to carry out independent defence research.

It would be a mistake, however, to assume that the British government as far back as the 1930s did not look beyond the purely professional side of the services for research into defence problems. But they relied on ad hoc committees set up for a specific purpose, which is not the same as having in-being an organisation such as RAND, outside control of any service department.

It might be argued that to turn to an agency outside government control for evaluation of specific defence problems might undermine the responsible authority and invite covert advice and criticism; but that should not be so if a proper relationship exists.

In the early 1930s the Service Ministries in Britain were sensitive to outside interference into their affairs. This is referred to by Sir Winston Churchill in his *Second World War*. (I, 116) Perhaps it is understandable because throughout the 1920s and 1930s there was an undercurrent of interservice rivalry due primarily to competition for a higher share of a miserably inadequate defence budget. This created a sense of mistrust, from which politicians were not excluded. In the early 1930s there was economic crisis in Britain, and the tempo of the people was for disarmament. Indeed, the vote of the pacifist controlled the fate of the Government, and consequently the armed forces were struggling for existence, which quite naturally made them ultra reticent to any form of outside inquiry, for fear of inimical motive.

That climate of mistrust does not persist in Britain today, but of course the whole approach to national defence has changed, as indeed it had to in the interests of survival. To obtain the full benefits from the work of an organisation such as the RAND Corporation, I believe there must exist an atmosphere of trust throughout the defence complex.

Perhaps the lessons to be learned from the experience of the United Kingdom are, first, that it takes years to build up a tradition of trust and confidence, be it between the fighting services themselves or between the services and the outside world, and but a few irresponsible actions to destroy it. Second, that modern defence has assumed such importance as to make it imperative that a nation tap every source available to find a solution to its defence problems. It may be that the United States has gained immeasurable strength by turning to civilian-controlled research organisations to assist in this respect.

THE READER will have to judge for himself the section of Higham's book dealing with military intellectuals. He briefly summarizes the works of a number of British writers on military affairs, of whom Richmond, Fuller, and Liddell Hart are best known. I know Liddell Hart personally and have great respect and admiration for his powers of imaginative thought and expression. All these authors were studied at pre-1939 staff colleges in Britain.

Although I have remained silent on that part of the book dealing with "military intellectuals," "pundits of sea power," and "advocates of mechanized land power," it is not intended to imply I necessarily endorse all that is written. I was left with the thought: How easy it is to make critical comments when writing in retrospect about events that have passed. And how much more difficult it is to look into the future and predict accurately what a country's strategy should be twenty years ahead and forecast the weapon systems to implement it, not knowing what the political atmosphere of the day may be then or in the intervening period.

No student of war would deny that mistakes were made in British strategical planning, in the evaluation of the effectiveness of certain weapons, in the tactical doctrine for the employment of land, sea, and air forces, and in the appraisal of Germany's military effectiveness from 1935 on. But on the credit side, let no man living forget that from July 1940 until the attack on Pearl Harbor the British Commonwealth stood alone as the guardian of the free world against the combined military might of Germany and Italy. She not only survived that ordeal but in that period inflicted a crippling defeat on the Italian land forces in Libya and overwhelmingly defeated the German Air Force over Britain and Dunkirk. That was not accomplished by negative and nebulous thinking but as the outcome of careful planning, foresight, weapon efficiency, first-class leadership, and high morale. All this was not brought about overnight but as the product of years of study, training, and professional ability.

The author seems to have been unduly influenced by the views expressed by the few who wrote on British air power between the two World Wars. Perhaps that is understandable; but he should have borne in mind that it is not always the most able and intellectual who write books on military affairs. I believe this was particularly so in Britain between the two World Wars in respect to air power. The opinions expressed by the few who did write should not necessarily be assumed to be the official doctrine and principles on which British air power was planned. A great deal of thought and study went into the formation of the policy on which air power was founded and developed during the years leading up to the Second World War by many clever, far-seeing, and well-informed professional airmen, scientists, and dedicated civilians in the public service, the universities, and industry. To suggest that the whole philosophy on which British air power was based and its strategical and tactical doctrine sprang from one man, Lord Trenchard, is quite erroneous. Undoubtedly his influence, foresight, administrative genius, and aggressive spirit were reflected throughout the Royal Air Force and

were a bequest of inestimable value deserving the highest praise.

In my opinion a book written on the subject chosen by Robin Higham loses merit if it concentrates almost entirely on criticism, trying to give the impression that all those in positions of authority and trust during the period under review lacked vision and strategical perception. A critical book gains in strength if it gives credit where credit is due and an explanation why certain things did not happen which when viewed in retrospect seem to have deserved higher priority. Criticism alone, without some approbation, gives the impression that an author has an axe to grind, a "bee in the bonnet," is suffering from an emotional pique, or is critically destructive to arouse sensation.

It is not practical to challenge all points of disagreement because they are too numerous and my article would become a catalogue of corrections and denials. Nevertheless, I wish to make it clear that in my judgment that part of the book dealing with air power is coloured throughout by statements which are open to challenge. The book left me with the impression that it lacked a sense of historical research and that the author is not master of his subject, possessing little more than a superficial grasp of it. In explanation, let me select at random a few allegations or statements he has made, as a cross section of my critical thoughts on this book.

Higham states that the British apostles of air power believed that the threat of a gigantic knockout air strike in the opening stages of a war would keep the peace, and he goes on to criticize them for failing to provide the means to carry out such a strike. He claims the deterrent was neither operable nor credible to anyone but themselves. He admits these views were not supported by the working majority in any of the services. (pp. 119–20)

Higham does not say who were the apostles of air power, but so far as I am aware no such claims were ever put forward officially by the Air Staff in the 1920s and 1930s. Certainly such theories were not taught at the RAF Staff College during those years. The RAF did study the strategy of bombing industrial targets and specific complexes and its influence on the overall strategy of war, both at staff level and at the Staff College; also the effects of the bombardment of similar targets in the United Kingdom by an enemy.

The fact that certain theories may have been expressed by authors who held no official position or authority and by fictional writers such as H. G. Wells had no bearing on Air Staff doctrine and philosophy on which the structure and employment of the RAF were based.

Those members of the Air Staff who carried the burden of responsibility for advising the government on defence, for the buildup of the RAF in the years after Hitler came to power, and for its operational control at the outset of war were well aware that Bomber Command per se was not capable of inflicting mortal damage to German industry, let alone knocking her out by a single blow. What they did argue was the great contribution the bomber could make to defence as a counter to enemy bombing attacks and in support, particularly indirectly, of the other services, by an offensive against ports, communications centres, and other specific targets. They also argued that for a potential enemy to have a powerful bomber force which Britain was unable to match was inviting unilateral and unrestricted air bombardment of one's homeland.

The philosophy on the use of a potential weapon is not necessarily at fault because the actual ironmongery is not immediately available in quantity and perfection in front-line units. The Air Staff argument in support of strategic bombing was based on the results it might be expected to achieve, not on the results it could achieve with the meagre forces at its disposal before 1939.

It would have been preposterous to claim in 1939 that Bomber Command could win the war single-handed, and no such claim was ever made. Nevertheless, Bomber Command was the only means of dealing immediate and increasingly heavy blows against a triumphant enemy and undermining his war economy.

It is admitted the RAF did not have the means to carry out a sustained daylight offen-

sive against Germany immediately after the fall of France, because of the depth of penetration and effectiveness of Germany's air defence system, which by then was extended into the occupied countries of Europe. This necessitated a switch to night bombing, for which Bomber Command was neither equipped nor trained. Undoubtedly this was a grave weakness, and the Air Staff cannot altogether be excused either for having made no provision before 1939 for long-range fighters or for failing to foresee the possibility of having to employ Bomber Command in a night operational role and to make provision for it. I do not condone this failure, but it should be borne in mind that the British aircraft industry was stretched to capacity from 1936 on, and the country was not prepared to accept an industrial switchover to a war footing. An additional new type of fighter for long-range escort would not have been possible, although it is admitted the official Air Staff policy before the war was against fighter escort.

It would be a mistake, however, to imagine that Bomber Command was almost ineffective up to 1944 as implied by the tone of the Higham book.

During the Battle of Britain the Command conducted the most crippling and devastating attacks against the assembled invasion barges and ports of concentration. In Ostend harbour alone 80 barges were sunk in one day and large numbers of German soldiers killed. Verbatim German reports on these attacks are contained in William L. Shirer's *The Rise and Fall of the Third Reich.* (pp. 922 and 925, Pan edition) Also in a statement by Churchill in *Second World War.* (II, 271, 274, and 275) The account given by Shirer of the bombing of Berlin on the night of 25 August 1940 is of interest. Although no great material damage was inflicted on the city, the attack had a most significant effect on the Battle of Britain by causing the Germans to switch their offensive from the RAF fighter airfields to centres of population. (pp. 931, 932) In 1941 much damage was caused to the north German ports by Bomber Command in an offensive associated with the Battle of the Atlantic. Kiel, Bremen, Wilhelmshaven, and Hamburg were each attacked several times, and large-scale mining operations were carried out. Heavy damage was also caused to certain targets in the Ruhr directly affecting U-boat production.

During 1942 and 1943 the Bomber Command offensive gradually increased in intensity as the size of the force was built up and the effectiveness improved by the introduction of heavier bombs and modern navigational equipment. The damage inflicted, although extensive, was not mortal; and this is used as an argument by those who try to belittle Bomber Command's contribution to victory. It is true that by the end of 1943 German industrial capacity employed directly on war production was at a higher level than in 1939. Nevertheless, but for the Bomber Command attacks it would have been at a higher level of output and free to concentrate on specific equipment, perhaps of a more destructive nature, rather than having to cover the whole range of armament requirements. Also Germany was forced to concentrate ever increasing numbers of workers on repair and salvage operations when they could have been more usefully employed on other duties. At the same time she was forced to strengthen her home air defence organisation, which absorbed both manpower and material at a time when they were required in other theatres of war. (I will have more to say about the bomber offensive later.)

Writing on the deterrent striking force (a term I had never heard used in the RAF in relation to a bomber offensive until the advent of the atomic bomb), Higham writes: ". . . moreover, the basic strategy adopted was false in that emphasis was put first upon a blow against an enemy and only secondly and with extreme reluctance upon defence of the island. . . ." (p. 18) The way it is expressed is utterly and entirely false.

To my knowledge it had always been the teaching in the RAF since early in the 1920s that air power demanded a balance between the offensive elements as represented by the bomber and the defensive in the form of the fighter, and the arguments for a strengthened and balanced air force were pressed with cogent argument and consistently throughout

the years up to 1939. Unquestionably a ratio between fighter and bomber was laid down as a planning figure, and until the introduction of radar, which revolutionized the whole problem of air defence, the ratio was 2:1. This figure had been worked out from practical experience in the First World War and from exercise assessments in peace. To suggest there was a priority as between bomber and fighter is incorrect.

I believe that ratio was about correct until the introduction of radar. As soon as it became scientifically possible to obtain warning of the approach of hostile aircraft, fix their position accurately, and direct fighters for an interception, that ratio was changed. Even so —and I write with some experience of that time—it was not possible to intercept and destroy more than a percentage of a raiding force. This was proved in the Battle of Britain and in the bomber offensive against Germany by both U.S. and British bomber forces. I might add that Mosquito squadrons I commanded during the last two years of the Second World War, flying at treetop height, were rarely located by radar and were almost impervious to fighter attack: our casualties came from light antiaircraft fire.

Higham in his endeavour to belittle the RAF writes: "If Liddell Hart and Sir Thomas Inskip had not pressed for defence of the home base . . . England might well have been Nazified in 1940." (p. 139) This passage follows a condemnation of Trenchard and his influence on the RAF philosophy and obviously tries to give the impression that the Air Ministry and RAF neglected air defence. With great respect to both Liddell Hart and Inskip, this is not correct. Undoubtedly they supported the urgent requirement to strengthen the air defences of the United Kingdom, but Higham is obviously referring (p. 49) to a paper Liddell Hart wrote on the expansion of antiaircraft gun defence in 1937, which was an army responsibility. The Air Ministry three years before had set up the investigation that led to radar, and by 1937 a programme of development was well under way and the fighter force was being expanded and crews trained as quickly as was possible under the conditions prevailing at that time. With due deference to the antiaircraft gun command of 1940, which I hold in high esteem, the doubling, trebling, or even quadrupling of its gun strength would not have influenced the Battle of Britain had the fighter force and all that goes into an air defence system not been built up as it was under the direction and initiative of the Air Ministry and RAF.

Whilst still on the subject of the air defence of the United Kingdom, Higham writes: "In 1940 two things, apart from British morale, prevented the Germans from defeating Britain: lack of range in fighters and bombers and insufficient sea power." (pp. 13–14)

It is the considered opinion of most students of war that it was primarily the RAF which prevented the Germans from defeating Britain in 1940. Thus Churchill wrote:

> Our fate now depended upon the victory in the air. . . . The result therefore turned upon destruction of the R.A.F. and the system of airfields between London and the sea. . . . We know that Hitler said to Admiral Raeder on July 31: "If after 8 days of intensive air war the Luftwaffe has not achieved considerable destruction of the enemy's air force, harbours and naval forces, the operation will have to be put off until May 1941." (*Second World War*, II, 281)

And again Churchill wrote:

> At the summit the stamina and valour of our fighter pilots remained unconquerable and supreme. Thus Britain was saved. (II, 300)

All the RAF airfields and radars between London and the sea were within range of German fighters and bombers based in France and the Low Countries. It would be more accurate to say the Battle of Britain was won as a result of years of careful thought and scientific endeavour. It proved the efficiency of the British fighters, radar systems, observer corps, communications system, guns, and indeed the whole range of equipment that went to make up an air defence system at that time. But above all else it was the standard of training, the morale, and aggressive fighting qualities of the aircrew which contributed so much to victory. It was not only the fighter force which

was involved but also RAF Bomber Command.

Higham's quite unfounded criticism of Trenchard, as well as the way it is presented, is a condemnation only of the author, because it reveals ignorance of the truth and a prejudiced approach to his examination of Trenchard's contribution to British air power. His innuendoes and constant censure are in poor taste. As an example: "For despite his emphasis upon training, he bequeathed to Churchill the Prime Minister, his former master, a weapon hardly ready for war in 1940." (p. 239) This despite the fact that Trenchard retired as Chief of Air Staff in 1929—ten years before the outbreak of war and only eleven after the formation of the Royal Air Force.

This is not the place to deal with the tremendous struggle Trenchard had between 1920 and 1929 to obtain more than the most parsimonious share of the defence budget for the RAF. It is, however, of interest to note that while Churchill was Chancellor of the Exchequer the RAF budget in 1928 was only £16½ million and that over the five years ending in 1929 out of £600 million devoted to defence the RAF's share was only three shillings in the pound. Moreover in February 1928 Trenchard wrote to Churchill: "I consider it my duty to point out that we are in a lower state of preparation in England, and to a certain extent abroad, than we have been for the last 4 or 5 years. . . ."

It is sad to record that Churchill, of all people, when Chancellor of the Exchequer (1924–29) kept a financial stranglehold on the services in the middle and late 1920s; to every request for money came the same answer: "What is it wanted for?—there will be no war for ten years"! Besides obstructing and restricting research, development, expansion, and experiment within each service, this created a bitter rivalry, already referred to, among the services. That was the financial climate of the day, and its influence was directly reflected on the preparedness of the services for war in 1939. It is almost miraculous what Trenchard did achieve under the circumstances.

Besides material things, he gave to the RAF an insatiable appetite for professional pride, a desire to get at the root of a problem, a distaste for ostentation (in RAF parlance known as "bull"), a defeatless sense of humour in adversity, and a flexibility of outlook on professional matters. He was the man who designed and built the foundations of the RAF, which, with due deference to the opinion of Robin Higham, in the conviction of those more qualified to judge played a decisive part in the Allied victory in the Second World War.

Higham seems to be obsessed with his prejudice that the strategic bombing of Germany was unsound, because he rides his own hobbyhorse that the object of the bombing was a massive knockout blow to break the will of the German people to make war. And because the RAF lacked the means to achieve such an aim in 1939, he argues that the whole philosophy of the RAF was at fault and the Service should have concentrated more on air defence and tactical air forces.

The author makes the mistake of placing too narrow an interpretation on the aim of the strategical bombing of Germany. Actually its aim was changed as the war progressed. Whereas in 1940 and 1941 it was limited to precise attacks against specific targets associated with, for example, counterinvasion operations and the Battle of the Atlantic, in 1942 it was changed to area attacks with the object of destroying Germany's capacity and will to make war, creating the conditions for an Allied second front, and relieving pressure on Russia. In 1943, after the Casablanca conference, the bomber directive was amended to read: "The aim is the progressive destruction and dislocation of the German military, industrial and economic system, and the undermining of the morale of the German people." This directive was broken down into more detailed instructions, as, for example, first in order of priority, submarine construction yards; next, the aircraft industry; third, transportation; fourth, oil plants; and so on. The destruction of these various complexes, vital to the German war economy and its influence on civilian morale, was an indivisible aim so far as the implementation of the bomber directive was

concerned. Perhaps the attacks against, for example, ball-bearing plants were not as successful as had been hoped, whereas the offensive against transportation was more successful than had been thought possible. With morale, it may or may not have been as successful as has been suggested—it is difficult to judge. But how successful was the bombing and how far did it go in achieving its aim?

The bombing offensive against Germany was carried out by the air forces of the United States and Britain in close cooperation, working to a single directive and joint plan. Both air forces dropped approximately the same tonnage of bombs on Germany, and the same targets were often attacked by both air forces, the USAF by day and RAF by night.

What were the overall economic effects of the air offensive? I quote from the U.S. Strategic Bombing Survey:

> From December 1944 onwards all sectors of the German economy were in rapid decline. The collapse was due to the results of bombing working in combination with other causes. The output of armaments fell from a peak index figure of 322 in July 1944 to 263 in December and 145 in March 1945. (pp. 36–38)

And this is what Speer, Minister for Armament and War Production, in a report dated 15 March 1945, had to say:

> The German war economy is heading for an inevitable collapse within 4–8 weeks.

Did the strategic bombing of Germany create the conditions for the Allied second front? Again I quote from the U.S. Strategic Bombing Survey:

> Even if the final military victories that carried the Allied armies across the Rhine and the Oder had not taken place, armament production would have come to a virtual standstill by May. The indications are convincing that the German armies, completely bereft of ammunition and motive power, would have had to cease fighting. (p. 38)

What is significant is that, in spite of the greater destructive power of the weapons used in the Second World War as compared with those used in the First, the casualties suffered by the British land forces from the time of the landing on the Normandy beaches to the final collapse of Germany were lower than those inflicted on an older generation before breakfast at Passchendaele on 6 November 1917. (I have no figures on U.S. casualties.)

In conclusion, may I express the view that a defensive strategy is the handmaid of the weak and timid, and although it may be necessary as a temporary expedience it leads to disaster if adopted as a national policy. By contrast, an offensive strategy, exercised with boldness, decision, and determination, leads to strength and success.

Boyup Brook, Western Australia

Dr. Higham replies

IT IS AN HONOR to be reviewed by such a distinguished officer, so it is with regret that I must take issue with Sir Basil on several points.

Quite true, much supporting material exists. As I pointed out in the Preface, a 35-page bibliography is contained in my companion volume, *Armed Forces in Peacetime: Britain 1918–1939* (London: G. T. Foulis, 1963). In that volume I agree with Sir Basil on many points and treat the services and their peacetime problems sympathetically. Sir Basil states that I do not name the apostles of air power; yet I devoted considerable space to showing the development of thought from Lanchester through Sykes to Groves. I also mentioned a number of officers whose ideas can be assumed to have had official sanction, since they were in the Royal Air Force and spoke on matters of policy. I cited, too, Air Staff policy from the appendices to Webster and Frankland's *Strategic Air Offensive against Ger-*

many and from the official history of the First World War, *The War in the Air.*

Sir Basil interprets the U.S. Strategic Bombing Survey to mean that air power accomplished its role, whereas I hold that it shows the prewar doctrine lacked the means to achieve its purpose. In defense of my view I will say that five years of *war* is a long time for a weapon designed to prevent war to take effect.

Sir Basil as a leading participant enjoys an advantage over an author who had to dig into volumes of official histories and the memoirs of participants, including Sir Basil's. If my ground-breaking efforts resulted in some misinterpretations, in extenuation I might point to the Fifty-Year Rule which restricts use of official papers.

If historians have the duty to name names, perhaps reviewers have, too. Sir Basil does not name those who he says helped plan British air power. And some of the developments he talks about must either have been strictly in technical fields (in which the universities did do some work) or else have taken place after 1934. For instance, he indicates that the RAF was well aware that it could not inflict mortal damage on Germany after Hitler came to power; yet according to Webster and Frankland (I, 91–92) it was not until September 1938, in the midst of the Munich crisis, that the RAF's weakness in this respect was made patent.

My use of the current word "deterrent," which Lanchester used in 1915, to describe a concept of the earlier era seems to have led Sir Basil to refute the existence of the counterstrike idea itself. The Air Staff may not have realized that they were planning for a deterrent force, but others in the government did and were calculating the future in terms of a massive bombing of Britain. Whether or not Trenchard accepted the idea, he as Chief of the Air Staff was responsible for his service. My study of *United Kingdom History of the Second World War* convinced me that this deterrence concept *was* held by the RAF. Perhaps after expiration of the Fifty-Year restriction, official documents will better illuminate this question, too. Until then, I will contend that the air power people created their own exclusive world. Sir Basil's remarks suggest that those within the service should know what those outside are saying and measure the impact of both their own and the outsiders' words, plans, and actions.

The military should have both the doctrine and equipment to carry out its task. Sir Basil attacks Liddell Hart's stand in the later 1930s when a larger number of fighters rather than bombers was imposed upon the Air Ministry from outside. It can be argued that Liddell Hart's teaching influenced the adoption of new tactics in World War II which kept casualties down, notably in the invasion of France in 1944.

One lesson is clear—that doctrine and equipment, training and practice, must always be flexible enough to anticipate and respond to actual as well as hypothetical situations.

Kansas State University

A BOMBING AND A BEGINNING

COLONEL ALBERT P. SIGHTS, JR., USAF (RET)

LATE IN the afternoon, 21 heavy bombers, flying in line abreast at 12,000 feet, approached a coastal city. Beginning a new phase of the air campaign, they caught the defenders unawares and managed to attack and withdraw without opposition. Their target was the port area, but many bombs fell wide of the mark into an adjoining commercial and residential section. Altogether there were some 300 casualties, mostly civilian.

Two weeks later, the bombers, operating at maximum range, struck targets located in the heart of the nation's capital city. Again the air defenses proved ineffective, and this time nearly 600 people were killed or injured. Waves of fear and indignation swept the populace. In response to widespread public criticism, the government reorganized and strengthened home air defenses, reinforcing them with guns and planes diverted from other fighting forces.

As the daylight raids continued, flak and fighters began to take their toll. Eventually, mounting losses forced the bombers to change tactics. In a sudden shift to night operations, they surprised the defenders and regained ascendancy in the air battle. But now the bomber crews found they could seldom identify "military" objectives such as docks, factories, and railway terminals. So, for all practical purposes, the city itself became the new target for attack. To broaden the area of damage and destruction, incendiaries were used as well as larger high-explosive bombs weighing up to 2200 pounds.

Meanwhile the air defense had not been idle. Night fighter squadrons were deployed along the approach routes. Antiaircraft artillery was reorganized into sectors for barrage fire. Cable barriers were raised aloft with balloons. Some of the night raiders were shot down, but neither the people nor their government thought that defense measures alone would suffice. Believing "the bomber will always get through," they demanded that their own bombers strike back at enemy cities. In due course the defender did so, returning the attacker's blows with compound interest.

The defender was Britain, and the attacker Germany. Not Hitler's Germany, but the Kaiser's. The time was 1917–18, and this was the first Battle of Britain, described by Major Raymond H. Fredette in *The Sky on Fire*.† The book presents a balanced account, based on extensive research, of the little-known Gotha and Giant bomber raids on England, which, along with the more famous Zeppelin raids that preceded them, constituted "the first systematic strategic air campaign in history."

The author, who himself flew 31 combat missions with the Eighth Air Force during World War II, captures the flavor of these early air operations with much specific detail on aircraft and armament, the tactics of bombers and fighters, and the experiences of individual aircrews that flew these remarkable missions. One must constantly remind himself that this was the First World War, not the Second, as he reads how the Germans planned and rehearsed attacks to exploit surprise and selected approach routes to evade or confuse enemy air defenses; how bombers flew in tight formation to concentrate their own defensive machine-gun fire and picked up fighter escorts en route back to their bases; how air-sea rescue services were organized for recovery of airmen downed in the Channel; and how crew members carried oxygen for use on high-altitude flights—although, as one of them told

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†**Raymond H. Fredette, Major, USAF, *The Sky on Fire: The First Battle of Britain 1917-1918 and the Birth of the Royal Air Force* (New York: Holt, Rinehart and Winston, 1966, $6.50), xxiii and 289 pp.**

Major Fredette, they rather preferred "an occasional gulp of cognac."

In later years, most of these tactics and techniques became routine, but at that time they were novel, ingenious experiments, carried out with primitive equipment in an unknown hostile environment by men who were inventing air doctrine, not following it. Without textbooks to guide them, these German pioneers of strategic air bombardment undertook tasks far beyond their means in seeking, among other objectives, to disrupt the war industry of a major power with the few aircraft at their disposal. Plagued by engine failures, hindered by capricious English weather, and opposed by a determined, resourceful foe, they could fly only 27 raids in 12 months against targets less than 200 miles away. Altogether, they dropped about 125 tons of bombs but scattered them ineffectually over a wide variety of targets.

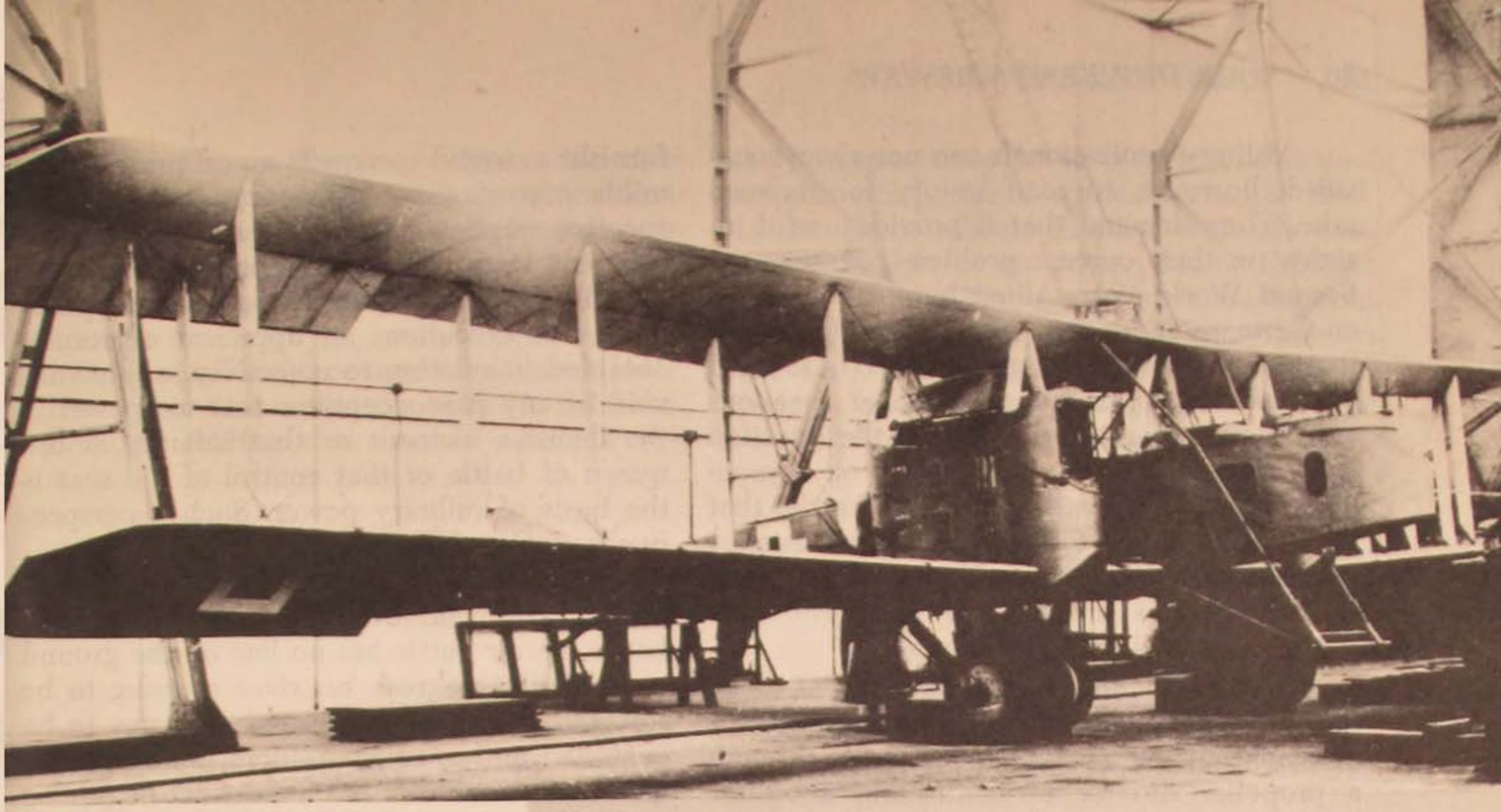
In England, on the receiving end, the material damage amounting to £1.4 million was relatively minor. Likewise, the 2708 air-raid victims represented, amid the grisly statistics of World War I, a minute loss for a nation that suffered more than three million casualties overall. As to the expected undermining of British morale, the author cites instances of panic in shelters and absenteeism in factories. On the other hand he describes how Londoners went out on balconies and rooftops to watch "the grand but deadly show" in the skies; how they castigated the Hun "baby-killers" and clamored for reprisal raids on German cities. Thus, in its net effect, the bombing very likely stiffened more than it weakened Britain's will to resist.

There was one substantial payoff for the attacker. With a handful of bombers striking on an average of once every two weeks, plus an occasional Zeppelin raid, the Germans were able to keep tied down in England a large air defense organization that ultimately included 16 fighter squadrons, 480 antiaircraft guns, 10 balloon aprons, and a vast control and warning network. In the absence of a continuing bomber threat, these resources of men and material might have measurably strengthened British forces fighting on the Western Front as well as those combating the submarine menace at sea.

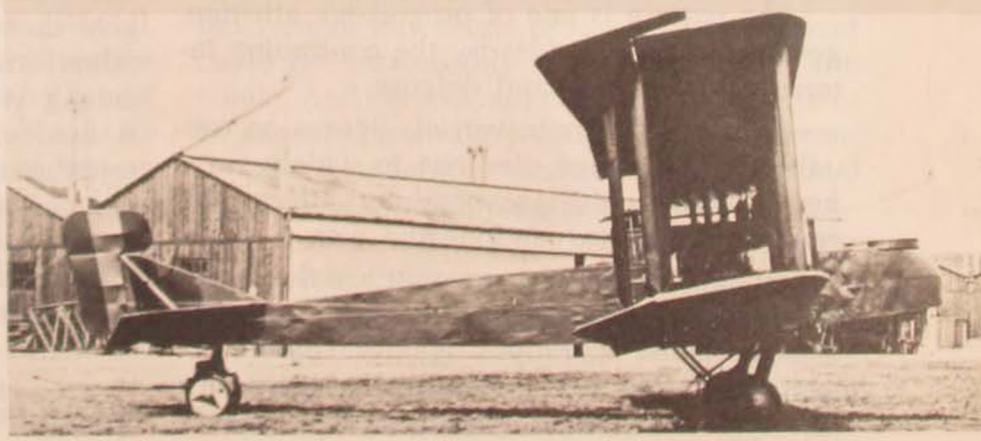
All things considered, it cannot be said that the German raids on England had any important influence on the outcome of World War I. They did, however, serve to introduce and legitimize strategic air warfare, from which incalculable consequences have ensued. In a more particular sense, the bombing had indirect and psychological effects that profoundly influenced the character and pattern of the Second World War.

As the author follows the back-and-forth struggle of offense versus defense, he shows how the succession of events prompted the British government to establish the world's first independent air force, against the advice of its own military leaders, including, surprisingly, most of the airmen themselves. By placing the air force on an organizational level coequal with the army and navy, Britain assured its airmen an influential role in postwar military planning and, as a corollary, made certain there would be continuing study and analysis of those functions of air power not directly related to operations on land and sea.

Memories of the German air attacks on England and the difficulties of countering them caused the British to overestimate the effects of bomber offense and underrate the potential of air defense. Arising out of these attitudes was a conception of war that led the Royal Air Force in the 1930s to concentrate on bomber development while the Luftwaffe neglected it; that induced Chamberlain in 1938 to yield at Munich when faced with an inflated threat of German bombing; that gave Britain in 1940 an air defense system able to turn back the German onslaught when it did come; and that went far toward defining the World War II objectives of the Anglo-American strategic air offensives against the Axis powers. Perhaps Major Fredette accords the German raiders of World War I more than their due of influence on these specific events, but his interpretation is reasoned and persuasive. At least he provides, for those who are interested in early air history, an absorbing account of this first strategic bombing campaign.



The German Gotha-IV bomber participated in the surprise attacks on England during the First Battle of Britain, 1917–18. The Gothas were opposed in air battles by Bristol Fighters and Sopwith Camels. . . . The twin-engine Gotha G-V was also used in WWI raids.



Military professionals are not always satisfied, however, to read history for its own sake. They demand that it provide useful insights on their current problems. During the Second World War, Allied bombers dropped on Germany more than 20,000 times the bomb tonnage that fell on England in 1917–18. And now, of course, there are nuclear weapons and intercontinental missiles. So the question arises whether there is anything of a practical nature to be learned from air battles that pitted the Kaiser's Gothas and Giants against Bristol Fighters and Sopwith Camels, or from the experiences of the iron men who flew those wood-and-fabric biplanes.

Admittedly, there is not much point today in studying the outdated technical problems of synchronizing a machine gun to fire through a propeller disc or of controlling a fighter intercept without use of radio or radar. However, technology is not the only factor in air warfare. There are still the timeless military problems of designating attainable objectives and deciding how best to use whatever men and machines may be at hand to attain them.

Major Fredette's account of bombing in World War I cannot fail to impress the thoughtful reader with how much the fundamental character of strategic air warfare remains unchanged. Now, as then,

—*the objective* is to weaken or destroy the will and capacity of an enemy to wage war;

—*the means* is to deliver explosives on "vital targets," i.e., those relatively few targets, chosen out of limitless possibilities, that are most critical to the enemy and lie within the capabilities of the attacking force to destroy;

—*the pattern* is one of progressive attrition, governed on both sides by the continuing interaction of offense and defense;

—*the result* is controversial: figures on casualties and damage give rise to widely varying estimates of how bombing affects the enemy's ability to continue the war.

Indeed, strikingly apparent are the parallels between the earliest bombing campaign and the latest operations against North Vietnam. Therefore, it would seem that air power history, even that of fifty years ago, should furnish a sound perspective to present-day military strategists. However, a sound perspective implies a reasonably complete and coherent view of past air operations: an appreciation of the significant aspects of planning and execution; an appraisal of results obtained in relation to objectives sought—devoid of any preconceptions that air power is the decisive element or that infantry is the queen of battle or that control of the seas is the basis of military power. Such a perspective is not easily acquired.

Part of the difficulty lies in the nature of air warfare itself. Unlike a conventional land battle, an air battle has no line on the ground to mark its progress, no river crossing to be forced, no hill to be captured, no army to be encircled and crushed. Seldom is there a single engagement that has a clear-cut beginning and ending or an unmistakable turning toward victory or defeat. Air operations typically begin on the first day of war and continue without intermission until the last. The likelihood of success or failure becomes evident only gradually in the rising or descending curves of myriad statistical charts: tonnages of bombs delivered, percentages of target systems destroyed, ratios of aircraft replacements to losses, etc. But what were the key decisions that determined the course of an air campaign? Which were the sound judgments, and which the mistaken ones? How did air power affect the overall outcome of the war?

Air history does not ordinarily give explicit answers to such questions. It tends to be episodic and fragmentary. It is rarely critical, though often laudatory. It includes too many uncorrelated statistics and too few patterns to give them significance. Air warfare, like any other form of military conflict, involves choices among various alternative courses of action. A final victory does not of itself prove the soundness of every strategic and tactical decision made. Yet this is what much of our military history seems to imply. It is no wonder that, as one Air Force writer recently said, air strategists accuse historians of having nothing to offer.*

*Major John Schlight, "History and the Long-Range Planner," *Air University Review*, XVIII, 1 (November-December 1966), 98.

The Sky on Fire is a history that does have something to offer. It is a thoughtful, analytical account, written by a professional airman, of a significant period in air history. It describes and seeks to assess the results of a strategic air campaign, surely one of the most difficult of all military operations to evaluate. The author writes that his book "is but a beginning," adding that further research will likely suggest revisions in his account as well as in his interpretation of the events described. As Air Force officers familiar with the contemporary uses of air power, Major Fredette and others like him are in an advantageous position to reconstruct its past uses in ways that furnish a sound perspective for future strategic and tactical planning. Let us hope we shall hear more from them.

Arlington, Virginia

THE ROYAL AIR FORCE IN RETROSPECT: III

THE STRATEGIC BOMBING OFFENSIVE: NEW PERSPECTIVES

Captain David MacIsaac

LOOKING back over the twenty-odd years that separate us from the strategic bombing campaigns of World War II, we are sometimes dismayed that there should still be so little on which widespread agreement exists. At least in its broad outlines, the history of the campaigns has been recorded with painstaking skill. Controversy nevertheless remains alive; hindsight has been applied to the air war with an intensity usually reserved for campaigns that ended in disaster for those who undertook them.

But if we are sometimes dismayed, we should not be surprised. Controversy, after all, has been a formative influence throughout the entire history of aerial warfare. Whether or not airplanes could be used to drop bombs on targets was debated long before there was an airplane capable of doing so. Whether bombing from airplanes was "legal," whether it was "moral," whether it was in accord with "the principles of war"—these and other questions have a history that predates Kitty Hawk and whose end is not yet in sight.

With regard specifically to the strategic air offensives of World War II, I think it safe to say that controversy will never die out completely; the stakes, after all, were high, and the results, in Europe at least, could not be measured definitively. With the passage of time, however, we may confidently expect that the range of disagreement will be steadily reduced while the controversy itself will become more temperate and precise. This assumption is based on two considerations. In the first place, only time and the continuing sifting of the evidence can provide us with a comprehensive view of an undertaking so massive that the view of any single observer or participant could not conceivably have encompassed the whole. And second, among the by-products to be expected from the passage of time and continual sifting of the evidence is the gradual opening of new approaches to the subject—new, that is, in the sense that earlier historians addressing the same topic were not able to employ them. Among such promising approaches are (1) analyses of the controversy itself and (2) analyses that attempt to treat the bombing campaigns not as a unique inter-

ruption in the ongoing course of history but rather as part of a continuing process, one that began before 1939 and did not end in 1945. An excellent example of the former approach is Noble Frankland's *The Bombing Offensive Against Germany.*†

Mr. Frankland approaches his task with formidable qualifications. After service as a navigator in Bomber Command of the Royal Air Force during the war, he devoted twelve years to a study of the bombing offensive and was coauthor, with the late Sir Charles Webster, of the British official history, *The Strategic Air Offensive Against Germany.* Since 1960 he has been Director of the Imperial War Museum. In his latest book Mr. Frankland's aim, essentially, is to define the legitimate limits within which any continuing controversy should be contained. In a brief Introduction he provides a hint of what later becomes a major theme of his essay. Perhaps, he suggests, people have preferred to feel rather than to know about strategic bombing. That this might be true can be deduced from the curious fact that "the various judgements of strategic bombing which are made, are scarcely related to the knowledge of the campaign which exists." We must, he insists, relate our views of the bombing offensive to the specific circumstances, decisions, and events that governed its conduct.

His opening chapter provides a brief but thoughtful treatment of the origins of the strategic bombing concept. Particularly striking is Frankland's suggestion that the idea may have been derived unconsciously from the need to find a substitute for the horrors of the 1914–18 trench stalemate. Naval blockade, Britain's classic answer to problems of Continental warfare, was becoming progressively less efficacious in the twentieth century as the individual units of sea power became "too formidable and too expensive to be expendable." Strategic air theorists, he suggests, were waiting in the wings with a new idea closely paralleling that of blockade in that it aimed at the destruction of "the sources as opposed to the manifestations of an enemy's war power." Then, approaching his subject from a different side, he emphasizes the long-range significance of the German bombing raids on London during the summer of 1917. One raid in particular, that of 13 June, resulted in a direct hit on Liverpool Street Station and a consequent casualty list of almost 600, including more than 150 killed. The public uproar that followed this outrage led the Cabinet to appoint a special committee, which in turn recommended the creation of a separate air service "as an independent means of air operations." Thus was reflected, in the very birth of the RAF, the concept of retaliation in kind as the only appropriate defense against the threat of enemy air attacks.

Although less than thirty pages in length, Frankland's opening chapter contains more food for thought than many thousands of pages that have been devoted to the early history of strategic air theory. A distinct pattern seems to emerge: technology promised a new answer to a pressing military need; men came forward with suggestions, but it took a series of incidents to create a crisis from which evolved a new institution wherein men, with their new ideas and their new technology, could work in concert toward a commonly recognized goal; in doing so, they concentrated their effort on developing a capacity for strategic, or independent, operations (as opposed to the support of ground or naval operations) because they quickly realized that their independent status as a service could logically be preserved only so long as there was something they could do "independently." If much of this has been said before and by others, it certainly has not been done either so succinctly or so persuasively.

In his second chapter Frankland outlines the main characteristics of the bombing war from 1939 to 1945. His particular concern is to reveal precisely the stages and methods by which it developed, in the hope of showing

†**Noble Frankland, *The Bombing Offensive Against Germany: Outlines and Perspectives* (London: Faber and Faber, 1965, 18*s*), 128 pp.**

that many of the criticisms that have since become current "are wholly groundless for operational reasons alone." By way of illustration he shows how the RAF's policy of "area bombing" replaced the original idea of "precision bombing" for the simple reason that the latter proved technologically impossible until very late in the war. If a few specially trained units such as the Pathfinder Force were capable of remarkable precision, we should not blithely assume that the main force was equally capable. As he later points out, much of the postwar argument about supposed alternatives open to Bomber Command "makes no more sense than would the suggestion that Lord Gort made a serious mistake in not driving the German armies back across the Rhine when they launched their attack on the West in May 1940."

Another major theme of this chapter is that the strategic air theorists erred gravely in their assumption that they had in hand a "revolutionary" instrument of war, one that could carry the war directly to the enemy heartland without taking the preliminary step of defeating the opposing air forces in battle. Here Frankland appears to line up solidly with a major element of the now famous critique by Admiral Sir Gerald Dickens that appeared in 1948, *Bombing and Strategy: The Fallacy of Total War*. He concludes the chapter by suggesting how the bombing offensive might have produced decisive results earlier had it only been possible to reconcile the widely differing conceptions of what should constitute the main target objectives. His conclusions here are generally in accord with those of the U.S. Strategic Bombing Survey.

The final chapter, entitled "In Retrospect," is a *tour de force* of reasoned thought and striking clarity of expression. All the familiar bones of contention—the immense costs of the campaign, the alleged inefficiency of the effort, the results obtained, the relevance of the campaign to the Allied grand strategy, the subsequent moral revulsion shared by many on both sides—all are put to the demanding test of how well they reflect an understanding of the actual capabilities at specific stages throughout the war. The conclusions that are drawn make it clear that this book is no attempt at whitewashing by a captive official historian. Specific decisions are singled out as at least questionable, and the contributions of the Air Ministry's publicists in "nurturing basic ignorance and creating woolly thinking" are properly identified. The major contribution of Frankland in this discussion is persuasively to demolish the arguments of those who, like Major General J. F. C. Fuller (*The Second World War*, 1948), have held that the air offensive was characterized by wanton vindictiveness on the part of the Allied leaders in general and Mr. Churchill in particular. And he does this, I might add, without once referring by name or reputation to any of the more outspoken critics—a most effective tactic.

It is difficult to fault the book on any scale. There are a few minor inaccuracies[1] but none that affects the main thesis. American readers, to be sure, may fret over the emphasis given to the British side of the Combined Bomber Offensive; but I see no objection here, since many Americans might well be cured of their Hollywood-induced misconception that the bombing of Germany was an American affair from start to finish. One could argue, it is true, that Frankland's conclusions are essentially unchanged from those that he and Sir Charles Webster published in 1961.[2] Such a view, however, would fail to credit Frankland with all that his new book contains, especially its provocative Introduction and opening chapter. To his primary aim, the clarification of points at issue in the postwar controversy, he does ample justice. For this reason (as well as for the ultimate compliment he pays his readers by presenting his views in an engaging, precise, and lucid style), his book is worthy of our attention. Its insights and perspectives are of significant importance for both the present and the future.

OUR SECOND new approach, that of viewing the bombing offensives in the perspective of earlier and later developments, has been attempted in a recent book by George H. Quester, an instructor in the De-

partment of Government at Harvard.† Mr. Quester's thesis is that "the major strategic complications imposed by bomber aircraft actually appeared long before 1945, that they arose early in the twentieth century with the introduction of aircraft systems that first led governments to *assume* the bomb-delivery capabilities that only now exist." To support this thesis the author presents a capsule history of strategic air theory and practice, one that has the particular virtue of making it clear that such terms as "deterrence" and "balance of terror" are not as modern as is often assumed. In Britain particularly, such writers as F. W. Lanchester and J. M. Spaight were writing (in effect) about counterforce and countervalue strategies as early as 1915. In 1936 Jonathan Griffin, protesting the developing bomber policy of the RAF, wrote of ". . . a balance of terrors—for that is what the balance of power, loaded with bombs, should be called." So far so good; Quester's initial thesis is not to be denied.

But he attempts to do more than illustrate the antiquity of a number of supposedly modern concepts; he tries also "to break some ground on the analogous interchange possible between the issues of air strategy before and after 1945 . . ." And on this rock his ship founders. Sympathetic as one may well be with his attempt to show the "new strategists" that many of their assumptions can be tested against preatomic experience, one cannot in good conscience allow Mr. Quester to rearrange the historical record to suit his fancy. Many of his errors appear to be the result of either careless research or incompetent proofreading.[3] But others are not so innocent. To say, for instance, on the basis of prewar planning by Great Britain and Germany, that *in 1914* "a strategic air confrontation was at hand" is to stretch the facts to fit a pattern.

Quester's most daring foray, however, is his attempt to show that Churchill called for the bombing of Berlin in August 1940, not in retaliation or rage, but for the premeditated purpose of goading Hitler to attack London instead of the RAF bases. (p. 117) Few will deny—after all it was recognized almost immediately—that the tide turned in the Battle of Britain when Hitler shifted the raids onto London. But to read this intent into Churchill's decision is to do rather more than the evidence allows. In this respect, Quester's method is instructive. As "proof" he offers four quotations from Churchill's *Their Finest Hour* and lists them one after another in a manner that suggests the progressive development of an idea. A check, however, shows the four to be lifted out of context and placed in an order that does not correspond to the order of their original appearance. The first is from page 330, the second from page 342, the third from page 331, and the fourth from page 332. Somehow missing from this list—although in the original it follows directly after Quester's second extract—is Churchill's explicit statement that he agreed to the attack on Berlin because he "believed that nothing impressed or disturbed Hitler so much as his realization of British wrath and will-power."

Perhaps I do the author an injustice; it is not inconceivable, after all, that Churchill consciously offered London as a sacrificial lamb. But the evidence offered by Mr. Quester (or by anyone else to my knowledge) is not sufficient to establish any such thesis.[4]

Historians, unlike lawyers and plumbers and other trade-unionists, are not congenitally hostile to the use by those outside their calling of the tools and methods of their craft. (Indeed, "amateur" historians from Thucydides to the present day have produced some of the best histories we have.) But they do insist that he who would use their tools do so with care and prudence. Mr. Quester has not done this; hopefully it shall be he and not history that is held accountable.

Forgiven his adventuresome approach to history, Mr. Quester has written a book that is not entirely without value. He does, for instance, make a good case that a major as-

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†George H. Quester, *Deterrence Before Hiroshima: The Airpower Background of Modern Strategy* (New York: John Wiley & Sons, Inc., 1966, $6.95), xiii and 196 pp.

sumption of the years between the wars—the assumption that civilian morale would disintegrate under bombing—was never truly analyzed. And although it may not have been intended, his account also suggests an all but inevitable "tendency to escalate" whenever bombing is adopted as a strategy. Predicting an enemy's response to aerial bombardment, threatened or actual, remains an uncertain science. Part of the reason for this probably lies in the fact that the historic instances of the use of air power as an instrument of policy have been studied less diligently than we might expect. If this is true and if Mr. Quester's book encourages others to undertake such studies, it will have more than earned its passage.

EACH OF THESE BOOKS, then, makes a contribution. And if it is true that many airmen today, especially those who participated, are sometimes irritated at the long life of what the British call "the bomber controversy," it is also true that it is only through the continuing and agonizing reappraisal of the record that history can attain its proper goal—a view of the past that reflects the present to the extent that it helps us understand where we are in time and how we got there.

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Notes

1. For instance, casualty figures given for the German raid of 13 June 1917 are only approximations; and Frankland, following a common error that can be traced to the famous Smuts Memorandum, speaks of a German raid taking place on 11 July 1917, whereas the correct date is 7 July.

2. *The Strategic Air Offensive Against Germany* (4 vols.; London: Her Majesty's Stationery Office, 1961), III, 283–311.

3. The book abounds with examples in both categories: (1) Precise dating of events is apparently a matter of small importance. A check of the dates given by Quester on p. 18 *against his own sources* shows at least two errors: for September 27 (RNAS counterforce raids begin on Zeppelin sheds at Düsseldorf) read either September 22 (first attempt to bomb Düsseldorf) or October 8 (first successful raid against Düsseldorf); and for December 21 (first German bombs on British soil) read December 24. On p. 146 he gives October 10, 1943, as the date for the Schweinfurt raid and cites Webster and Frankland, who give the date correctly as October 14. (2) Among the most prominent proofing errors: "Smut" for Smuts (p. 39); "rais" for raids (p. 167); Lord Thomson becomes "Lord Thompson" in a footnote (p. 66); "E. B. Ashmore" in a footnote is "J. B. Ashmore" in the text (p. 68); the citation for a quotation on p. 103 states "italics in the original," yet there are no italics to be found; and on p. 169 the reader is distracted by finding a closing parenthesis unpreceded by an opening parenthesis.

4. Others have suspected what Quester attempts unsuccessfully to "demonstrate." See for example: Denis Richards, *The Royal Air Force, 1939–1945* (London: Her Majesty's Stationery Office, 1953), Vol. I, p. 122; Air Marshal Sir Robert Saundby, *Air Bombardment* (New York: Harper, 1951), p. 96; and Hanson Baldwin, *Battles Lost and Won* (New York: Harper and Row, 1966), pp. 402–3.

NEW DIMENSIONS FOR NATIONAL SECURITY PLANNING

LIEUTENANT COLONEL WILLIAM E. SIMONS

IN WHAT WAYS has the shaping of national security policy changed during the decade of the sixties? Three quite dissimilar books, published in 1965 and 1966, provide some thought-provoking answers. Although their content, quality, and style differ markedly, each projects a significant theme.

American Strategy: A New Perspective, by Urs Schwarz, is an attempt to describe the growth of American strategic thinking in the twentieth century.† The author, foreign editor of a Swiss newspaper, has leaned heavily on

†Urs Schwarz, *American Strategy: A New Perspective* (Garden City, N.Y.: Doubleday and Company, Inc., 1966, $4.50), xiv and 178 pp.

the periodical literature, on theoretical formulations of defense policy and arms control, and on a few familiar speeches by government officials. He has made little use of such primary source documents as reports by government study committees or records of Congressional hearings on military programs. As a result, his view of strategy formulation suffers. While the book describes several theories and ideas that have circulated through the strategy literature, it does not present them within an accurate context of realistic strategic alternatives and actual policy decisions.

In many respects, it is a confused book. Its treatment of arms control and disarmament rationale as a component of "strategic doctrine" is troublesome to a reader for whom military doctrine has a specific functional meaning. The author's use of historical analogies to show traditional influences on more recent American politico-military reasoning displays inadequate understanding of both the strategic realities of earlier periods and the legitimate differences in contemporary political opinion. His attribution to certain writings of major influence on military strategy is often questionable, as in his claim that statements in the July 1950 issue of the *Bulletin of the Atomic Scientists* were "the most significant" in establishing the theme for studies on limited war. The book's emphasis on words and theories at the expense of decisions and actions leads to distortions of strategic policy, as in his faulting of "massive retaliation" for the lack of U.S. assistance to the French in Indochina but his failing to acknowledge that the same Administration intervened with conventional forces in Lebanon and the Taiwan Strait.

Despite the author's limited grasp of the dynamics and substance of U.S. strategy, his European background contributes insights which comprise a significant central theme: that whereas for other states the need to preserve one's security through discouraging aggression has always been real, the concept of preparing or threatening to use military power for international political ends is a relatively recent feature of the American mentality.

Arms, Money, and Politics was written by Julius Duscha, a political and economics reporter for the *Washington Post*.† His familiarity with governmental processes is amply demonstrated by his exposition and his skillful use of public documents. The *Congressional Record* and news releases by government agencies comprise his major sources, and his understanding of both their literal and inferential value is quite evident. The book provides good reading and valuable perspective for the military man, although the author frequently displays a robust irreverence for the services' doctrinal views regarding the need for certain favored weapon systems.

The author's understanding of Congress and some of its motivations furnishes the book's main theme. He argues that the so-called "military-industrial complex" does not represent a sinister conspiracy against the public welfare; on the contrary, it is openly supported and exploited by many segments of the public, which benefits directly from continually high levels of defense spending. Recognizing this, he claims, Congress has been reticent to challenge such expenditures, particularly so in contrast to its tightfisted handling of annual outlays for foreign aid, education, and the like.

The author cautions the need for greater restraint in appropriating defense funds and urges cuts in spending to enable more liberal financing of other programs affecting future U.S. security. His principal concern, in this respect, is the possible impact of partial disarmament on our defense-oriented economy. In a particularly provocative chapter (Number 7), he describes and analyzes various motivations for Congressional, military, and industrial resistance to disarmament proposals in general and, in another chapter, to the 1963 Partial Test-Ban Agreement in particular. He urges more objective and serious study of this

†Julius Duscha, *Arms, Money, and Politics* (New York: Ives Washburn, Inc., 1965, $4.50), 202 pp.

long-range political and economic problem.

The National Security Council was edited by Senator Henry M. Jackson, who served as Chairman of the Senate subcommittees on National Policy Machinery and on National Security and International Operations.† It consists of (1) excerpts from the subcommittee staff reports on specific features of our national security machinery, including national security staffing problems at Cabinet level, activities and problems of the National Security Council, the role of the Secretary of State, and the significance of Bureau of the Budget functions; (2) the Chairman's concluding recommendations; and (3) selected testimony of several prominent witnesses, all resulting from subcommittee hearings conducted from 1959 through 1961.

The book has historical significance, since many of the subcommittee's interim and final recommendations were implemented by the Kennedy Administration during 1961 and 1962. For example, in the appointment of McGeorge Bundy as Special Assistant to the President for National Security Affairs, 1 January 1961, he was given the task of consolidating the functions of the National Security Council Secretariat and the Operations Coordinating Board and generally simplifying NSC procedures. The position of the Secretary of State was strengthened by assigning his regional Assistant Secretaries and the Department's Policy Planning Council the responsibility for policy coordination formerly charged to NSC staff divisions. Means of improving mutual understanding and lateral personnel movement among different government agencies were developed, including the creation of a continuous State-Defense officer exchange program. Even though these and other recommended changes have already been incorporated into the national security policy-making machinery, the discussion of basic administrative principles and central policy-making issues has considerable value for the current reader.

Perhaps the most valuable parts of Senator Jackson's book are the selected testimonies. They contain the views of officials who have been instrumental in shaping our national security policy in recent years—men like Dean Rusk, Robert S. McNamara, McGeorge Bundy, David Bell, and their counterparts in earlier Administrations. Of these, perhaps the outstanding contribution to national security literature is made by the collected views of successive special advisers to the President on foreign and military affairs. Unlike the top officials in State and Defense, the role of these influential figures has seldom been examined systematically. Their descriptions of day-to-day activities provide valuable insights into the evolving processes by which national security policy is formulated.

TAKEN together, the three books say some rather significant things about national security planning. For one thing, they make clear the fact that national security has become a matter of providing for more than just military defense. The public vitality of the United States and of those nations whose interests are entwined with ours can be threatened by many forces besides aggressive enemies. Economic dislocation, social unrest, political instability, disease, ignorance, and fear of change are equally debilitating, and in some quarters of the globe they are more imminent than the threat of attack.

It is this reality which underlies the predominant concern of Jackson subcommittee witnesses with effective means of coordinating the policies and operations of various government agencies. This reality further explains the consistent recommendation that the Secretary of State, rather than the Secretary of Defense, be given proper recognition and authority as the President's chief Cabinet-level adviser on national security matters. Of the Cabinet officials, only he "is primarily charged with looking at our nation as a whole in its relation to the outside

†Henry M. Jackson (ed.), *The National Security Council* (New York: Frederick A. Praeger, 1965, $5.95), 306 pp.

world." (Jackson, p. 45) To him falls the responsibility of coordinating the policy planning and operational activities of all national security agencies.

The broadened definition of national security explains also the subcommittee's recommendations for greater lateral movement of government officials among different agencies. In its view, and that of several witnesses, the officer exchange program existing between State and Defense should be broadened to include at least the Central Intelligence Agency (CIA), Treasury, Atomic Energy Commission (AEC), and Bureau of the Budget. Eventually, the subcommittee notes, the cross-training and broadened perspectives afforded by such exchanges may point the way toward a more formalized "joint career service" in the area of national security, for specially qualified military and civilian officials.

The practical importance of coordinating the various program plans which contribute to national security is brought into sharp focus by the budgetary process. An expanded role for the Bureau of the Budget in national policy formulation was recommended by the Jackson subcommittee, and the range of decisions necessitated by the budget process was made explicit in the testimony of David Bell: not only must the government decide U.S. weapon and force requirements, but also it must determine the extent to which direct military aid and military outlays are required by our allies. Moreover,

> . . . budgeting for national security requires us to consider the addition to our security that may be made by contributing to the economic and social development of other countries through foreign economic aid. And, finally, budgeting for national security requires us to consider the underlying strength of our national economy—the requirements of economic stability and growth, and of the skill, education, and morale of our people. (Jackson, p. 208)

Some of the difficulties of budgeting for such a broad range of program expenditures are discussed by Duscha. Of particular note is his recognition of distinct Congressional preferences in authorizing funds for the different program areas. For example, rather superficial questioning of requests for huge military outlays is compared with lengthy examination in minute detail of requests for foreign aid appropriations. The impact of this tendency on the domestic aspects of broadly conceived security interests is also dealt with. In illustrating his philosophy that in bigness there is waste, Duscha speculates on the extent to which funds, resources, and skilled manpower expended on military defense have been diverted unnecessarily from education, transportation, urban renewal, labor retraining, public order, and conservation. It is a timely question in view of President Johnson's latest State of the Union message, in which he indicates his understanding of the Congressional mind by labeling the requested surtax, "to support the Vietnam war."

A second significant fact made clear by the books under review is that the formulation of national strategy and defense policy has become an increasingly important part of the nation's vital political processes. This has occurred with respect to both the substance of policy and procedures shaping it.

Changes in the *substance* of national military policy have affected the political life of the United States both in the international community and at home. The developing extent of the interaction between U.S. military power and U.S. foreign policy is a main thread running through the Schwarz book. In the years since World War II, American military commitments have ceased being characterized by independent expeditionary forces bent on total destruction of an enemy war machine in the name of moralistic war aims. Much of the fervor attached to earlier concepts of "just" war has been transferred to resisting Communism and to military readiness to oppose aggression. In addition to deterring the major Communist power, the United States has engaged in a number of crisis deployments and limited conflicts to preserve the political integrity of threatened allies. Through regional and bilateral defense arrangements, it has committed portions of its standing military establishment to prolonged service alongside allied units on opposite sides of the globe.

At home, as Duscha points out, the nature of post-World War II military commitments and the weapons on which they depend have brought economic prosperity to some regions of the United States at the expense of others. Certain regions simply have not been successful in the competition for prime contracts in the booming electronics and aerospace defense industries. As a result, these areas have become special targets for electioneering by parties out of power and special focuses for nonmilitary programs sponsored by Administrations in power.

The *procedures* for shaping military policy have affected our political processes in a variety of ways. One of the major military policy procedures is the annual Congressional appropriation of funds for military research and development, for new procurement, and for the operation and maintenance of existing forces. Decisions on the first two of these budgetary items are closely related to choices among strategy alternatives. As the Duscha book makes clear, this interrelatedness has contributed to vigorous participation in strategy and policy debates on the part of politicians and lobbyists. Defeat for a contending strategy might result in a lack of contracts and a loss of jobs for certain segments of the defense industry. Hence, the advocacy of particular strategies and their component weapon systems has become a regular part of campaign oratory and of legislative debate.

The military services also act as lobbyists for their favorite concepts and weapon proposals. To the extent that they are successful, they can exercise a major impact on the nation's budgetary commitments for years to come. Once selected, modern weapons require a continuous commitment of funds to feed their necessary numbers into the inventory, to sustain the forces and facilities needed to maintain and operate them, and eventually to modernize them in response to countering capabilities developed by potential enemies. Recognition of this led Senator J. William Fulbright in 1964 to warn (Duscha, p. 18):

> To the extent that the American people and the Congress shrink from questioning the size and cost of our defense establishment, they are permitting military men, with their highly specialized viewpoints, to make political judgments of the greatest importance regarding the priorities of public policy and the allocation of public funds.

The long-term commitments resulting from weapon and strategy choices have caused the policy planning machinery itself to become the focal point for political debate. The Jackson subcommittee hearings reveal interesting patterns of controversy between spokesmen for Administrations in power and their critics, some of whom later became their successors. Incumbent advisers to both President Eisenhower and President Kennedy seemed to stress that national security policy planning was more effective if accomplished by representatives of departments with operational responsibilities. Critics from outside the Administration currently in power, on the other hand, frequently stressed the virtues of independent planning staffs whose members were freed from ties to operating bureaucracies. That the responsibilities of public office may influence attitudes on such issues is illustrated by the views of Walt W. Rostow, whose criticism of interdepartmental committees in the Eisenhower National Security Council figured in the 1960 testimony. Later, after becoming head of the Department of State's Policy Planning Council, under President Kennedy, he apparently modified his viewpoint. He is reported to have encouraged members of that body to stay abreast of current operational problems, stating:

> The great forces which shape the long-run course of diplomatic events are embedded in particular decisions, addressed to immediate, short-run circumstances. . . .[1]

The necessity for coordinating several different national security programs and the additional complications injected by foreign and domestic politics accentuate a third fact brought out by these volumes: Our national interests and objectives must be clarified and understood to a greater degree than ever before. Among the national security tasks listed in its concluding statement, the Jackson

subcommittee assigned first position to "defining our vital interests" and developing a clear set of objective priorities. As the statement explains, "Unless our top officials are in basic agreement about what is paramount for the national interest—what comes first and what comes second—there is bound to be drift and confusion below." Furthermore, as Schwarz argues, the likelihood that technological developments for the foreseeable future will *not* alter the strategic environment tends to give the policy-maker the leading role. Since technology seems likely to improve only upon existing capabilities, the challenge will be to put the wide range now available to better use. This "enable[s] the planner on the highest level to ask first, 'What do I *want* to achieve?'" (Schwarz, p. 129. Italics added.)

The value of these three books derives not only from what they say but also from the kind of thought that they tend to provoke. When their main themes are viewed in the light of problems associated with the Vietnam war, the potentialities for nuclear proliferation, the recent European initiatives for improved East-West relations, and the potential revolution in intercontinental transport, the likelihood of a critical re-examination of U.S. national security policy becomes apparent. Indeed, such a review seems to have been initiated in the recent hearings conducted by the Senate Foreign Relations Committee. In anticipation of post-Vietnam circumstances, a reappraisal of policy may well stress improvement of its viability for the long haul, as was emphasized in the post-Korean period.[2] In any event, the problems discussed below seem worthy of consideration.

IN the past, considerable thought and energy have been devoted to coordinating the policies and program plans of various agencies contributing to the national security effort. Much additional work is needed to coordinate the implementation of these policies in the field. For example, despite the excellent concept of "country team" operations, there is considerable room for improvement in the field integration of military assistance, foreign economic aid, and technical assistance for nation building. To carry out these programs, the U.S. government has set in motion at various historical intervals several different agencies. Though they perhaps seek common objectives in each country where they serve, they nevertheless operate according to different perceptions of what needs to be done, according to their respective professional training and their particular bureaucratic constraints. Moreover, they often operate with different levels of budgetary support, as a result of which some exist with little sense of program security and with serious problems of personnel discontinuity.

Early U.S. activities in South Vietnam illustrate some of the difficulties. During the Diem era, CIA and regular military assistance programs operated side by side, the former aiming to improve the internal security apparatus through the training of police officials and the latter strengthening the army through training in conventional military equipment and tactics. The initial program to train unconventional counterinsurgent forces was also conducted by the CIA, among the Montagnards. Later, similar training was provided for Vietnamese Special Forces units by U.S. Army advisers. In the meantime, while increasing amounts of economic and technical assistance were being dispensed for nation-building purposes through International Cooperation Administration (ICA) and, later, Agency for International Development (AID) channels, the bulk of the Vietnamese armed forces continued to receive conventional military training from their advisers. One ironic result saw military and economic resources that were increasingly necessary for Diem's strategic hamlet and rural pacification programs being consumed inefficiently by Vietnamese province chiefs whose basic orientation was toward conventional military methods and objectives.[3]

Similarly conflicting programs are possible today in other recipient countries because of the multifaceted nature of our national security activities. Problems of coordination are particularly acute with regard to military as-

sistance, a program with a rather complex structure. Though specified in law as competitive for support "with other activities and programs of the Department of Defense" (Foreign Assistance Act of 1961, Sec. 504B), military assistance is budgeted and reviewed in Congress as an element of foreign policy. As with other foreign aid, responsibility for determining its value to a particular country rests with the Secretary of State, who also reviews regional program plans to ensure their compatibility with U.S. policy. In actual practice he has delegated the authority to perform these functions to the AID Administrator. However, the Secretary does not control military assistance operations in the field. The training of recipients of U.S. military equipment and the determining of equipment requirements are administered by the Department of Defense, through the Joint Chiefs of Staff. The JCS develop program priorities and recommend the strategic and military force objectives to be achieved in particular regions and countries. Through the appropriate unified commanders, they also establish and supervise the Military Advisory Assistance Groups (MAAG) that conduct the training of foreign military forces.[4]

Under the unified commanders, the training and weaponry dispensed through most MAAG's tend to be managed as part of theater-wide military preparations, oriented to the strategic assumptions of the cold war. This tendency and the structural features described give MAAG staffs an operational style that is not always compatible with that of other members of the country team. In several countries, MAAG chiefs command training staffs of hundreds, who are selected primarily for their proficiency with the conventional arms and equipment and the military techniques that receive primary instructional emphasis. Since the MAAG chiefs are answerable directly to the unified commands for the contribution which their programs make to regional defense, this instruction may be subjected to extensive formalized supervision in an effort to ensure its adherence to prescribed standards. Efforts to prepare host military organizations for assisting in the alleviation of internal conditions that encourage political and social instability may get short shrift. Among MAAG-type programs, notable exceptions are found in the military missions to Latin American countries; the Southern Command focuses its training efforts primarily on the complementary tasks of civic action and counterinsurgency.

Even in countries receiving considerable U.S. support for nation-building efforts, few embassies conduct extensive field operations. Few receive manpower and program budgetary support comparable to the MAAG organizations. Small embassy staff groups work in specialized functional areas, where their activities consist primarily of reporting on conditions, analyzing problem areas, and recommending program needs. Apart from Vietnam, economic and technical assistance field teams are modest in size. There is little in the way of a staff supervisory structure, and the operations are highly dependent on the approach taken by individual advisers. The concern of these nonmilitary elements of the country team is for local stability requirements, based on study of the political, economic, and military problems of a particular nation. The differences in style of operating between these country teams and a MAAG make coordinated control over all their operations a goal that is seldom achieved.

If coordinating the efforts of a variety of executive agencies is difficult, determining an effective role for the Congress in the pursuit of broadly defined national security interests also presents a challenge. Control of the purse strings for the different implementing agencies will continue to give Congress a strong influence over national security programs, but the traditional method of reviewing most agency programs in separate committees places limits on that body's ability to evaluate the overall national security effort in full perspective. Furthermore, Congressional investigatory powers are not normally called into play until programs the Congress has supported give evidence of falling short of their initially stated goals. By this time an agency may have developed considerable inertia through its field operations and its bureaucratic relationships.

To the extent that civilian control over national security policy is viewed as being exercised through elected representatives in

the legislative branch, this tradition may be in jeopardy. Moreover, the degree of control exercised may become less a result of overall policy judgment and more a reflection of the political motivations of individual committee memberships. That different Congressional committees are characterized by different attitudes toward equally significant aspects of our national security program has been illustrated in the controversy concerning the value of bombing North Vietnam. In a press conference on 24 February 1967, Secretary McNamara explained how apparent differences of viewpoint between himself and Secretary Rusk had resulted from their requirement to respond to different groups in the Congress. Some of the most vigorous advocates of harsher measures sit on the armed services committees of both houses, while several of the senators most vocal in urging cessation of the bombing are members of the Foreign Relations Committee. When different committee views are reflected in appropriations judgments for particular agencies, an assortment of national security programs that is not wholly in accord with overall national policy becomes a distinct possibility.

To call attention to problems such as these is obviously far easier than to propose solutions. Indeed, after the careful study which these issues require, some of the concerns expressed here may be found quite inappropriate. For example, is civilian legislative control a realistic operational principle in an era when the formulation and implementation of policy require the full-time efforts of trained professionals in a variety of areas? Is a carefully integrated, "master" national security policy necessarily advantageous in a world characterized by such dynamics as the erosion of former alliance systems, the spread of sophisticated weapons, the thrust toward national independence, and the conflict between ideology and pragmatism as a guide for national conduct? In our assistance to other nations, is regional planning under a unified commander or coordination of country team efforts by an ambassador any more effective than a system encouraging pragmatic opportunism on the part of local U.S. field teams? The three books under review do not attempt to resolve these dilemmas, but it is evident that such questions were in the minds of the authors as they wrote.

Had these volumes been written more recently, they would perhaps have raised yet another question: To what extent has the increasingly elaborate apparatus for shaping national security policy been equipped to reflect the public will? How the public views the relationship between such policy elements as economic aid, military assistance, and direct U.S. military commitment could have an important bearing on Congressional actions in particular. As the conflict in Vietnam illustrates, the choices between such elements may not always be clear at the time when vital decisions are necessary. Yet those whose sons and treasure would be consumed in any direct military involvement have vital interests and viewpoints that ought to be reflected in future national security policy judgments.

Santa Monica, California

Notes

1. Quoted in R. G. Colbert and R. N. Ginsburgh, "The Policy Planning Council," U.S. Naval Institute *Proceedings*, XCII, 4 (April 1966), 80.
2. See Glenn H. Snyder, "The 'New Look' of 1953," in Schilling, Hammond, and Snyder, *Strategy, Politics and Defense Budgets* (New York: Columbia University Press, 1962), pp. 386–491.
3. CIA activities in South Vietnam were reported by Peter Grose in the *New York Times*, 5 October 1964.
4. See Harold A. Hovey, *United States Military Assistance: A Study of Policies and Practices* (New York: Frederick A. Praeger, 1965), pp. 138–45.

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The Honorable Charles E. Bohlen (A.B., Harvard University) is United States Ambassador to France. He has been a Foreign Service officer since 1929 and has held high posts in Washington. Early in his career he began to specialize in Soviet and Communist affairs and the Russian language. He became one of the State Department's senior authorities in this field. He was with President Roosevelt at the Tehran and Yalta conferences during World War II, with President Truman at the Potsdam conference, and has attended numerous Foreign Ministers' meetings, notably those held from 1945 to 1947 in Paris, London, and Moscow. He attended the conferences at Dumbarton Oaks and San Francisco at which the United Nations was founded. As Counselor of the Department of State he attended the San Francisco conference on the Japanese Peace Treaty. He has served in Czechoslovakia, the U.S.S.R., Japan, France, and the Philippines. His last three overseas assignments have been as Ambassador in Moscow, Manila, and, since October 1962, Paris. In 1960 Ambassador Bohlen was promoted to Career Ambassador, the highest rank in the Foreign Service.

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AIR UNIVERSITY REVIEW AWARDS PROGRAM

Major William M. Henderson, a personnel analyst for the USAF Military Personnel Center at Randolph Air Force Base, Texas, has been selected by the Air University Review Awards Committee to receive a $200 U.S. savings bond for writing the outstanding article to appear in the *Review* during fiscal year 1967. Major Henderson's essay, entitled "The Analysis Mystique," was previously chosen the outstanding article in the January-February issue.

The awards committee has also announced that "Canada's Role in the United Nations" by John W. Holmes, Director General of the Canadian Institute of International Affairs in Toronto, has been selected as the outstanding article in the May-June 1967 issue. Holmes's article is one of a series on the Canadian defense structure and its role in world affairs appearing in the *Review* during Canada's Confederation Centennial.

The awards program provides for individual awards to authors writing in each issue, a $50 award for the outstanding article in each issue, and a $200 savings bond for the yearly outstanding article written during off-duty time. Bimonthly and yearly award winners who are military or civil service employees writing on duty time receive a plaque. The outstanding-article award plaque is shown at the top of the page.

The bimonthly winners for the past year are Maj. William E. Simons, USAF, "The Liberal Challenge in the Military Profession," July-August 1966; Col. Francis X. Kane, USAF, "Trends in Military Thought," September-October 1966; Col. Frank R. Pancake, USAF (Ret), "Why Military Assistance for Latin America?" November-December 1966; Maj. William M. Henderson, USAF, "The Analysis Mystique," January-February 1967; Maj. Alfred H. Uhalt, Jr., USAF, "De Gaulle: Enigma in the Western Alliance?" March-April 1967; and John W. Holmes, Director General, Canadian Institute of International Affairs, Toronto, "Canada's Role in the United Nations," May-June 1967.

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