

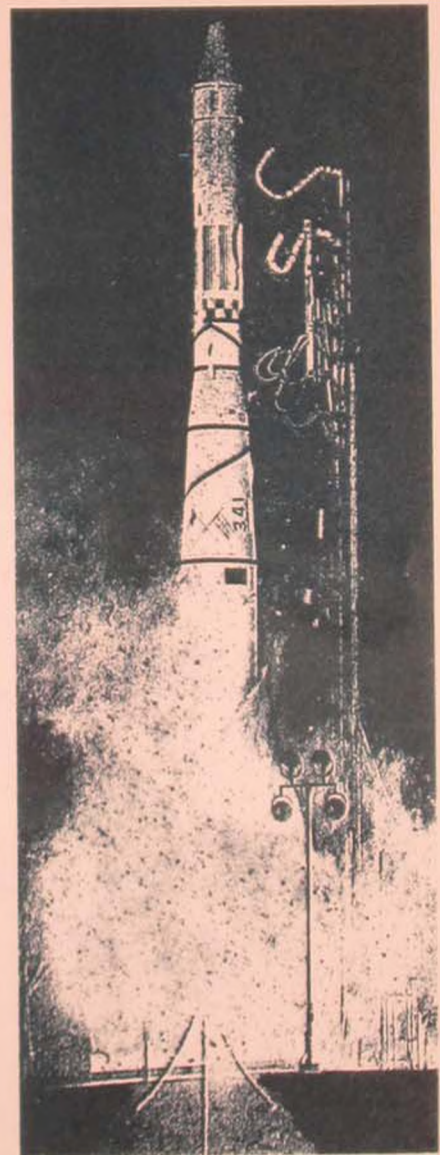
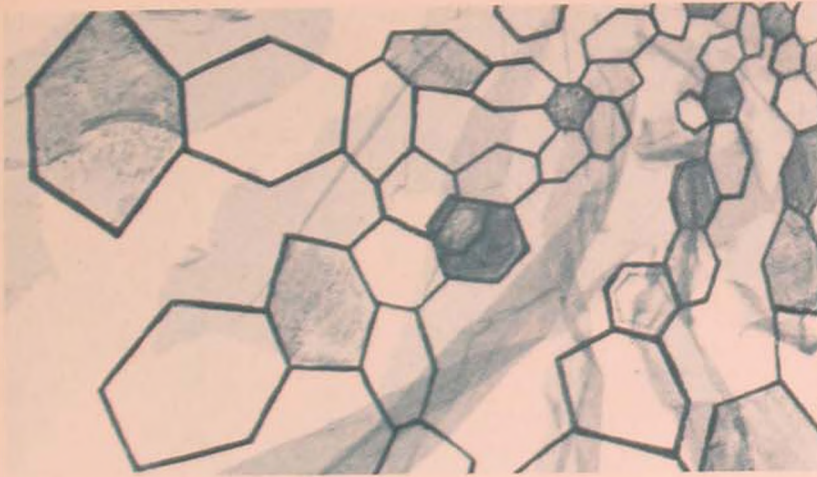
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AIR UNIVERSITY REVIEW



SOVIET CYBERNETICS . . . CANADIAN RESEARCH FOR
DEFENSE . . . CANADA'S ROLES IN NATO AND NORAD

MARCH-APRIL 1967

AIR UNIVERSITY REVIEW



THE PROFESSIONAL JOURNAL OF THE UNITED STATES AIR FORCE

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the cover

Our March-April issue is rather more cosmopolitan than usual as we consider external military and political developments and U.S. involvement and concern with them: Col. R. S. Sleeper shows how the Soviet Union uses cybernetics for political purposes; Dr. A. H. Zimmerman explains Canada's Defence Research Program and John Gellner assays her cooperation in NATO and NORAD; Major Alfred Uhalt and Lt. John Kotch size up some stumbling blocks along the path of Western Alliance.

Lenin stated that "the victory of socialism is possible, first in a few or even one single capitalist country taken separately." Now we learn that cybernetics, a term and technique unknown in Lenin's lifetime, has been enlisted in the crusade to spread the Communist world order. Colonel Raymond S. Sleeper, Chief of the Foreign Technology Division of AFSC, writes of this effort involving Soviet applications of analysis techniques.

CYBERNETICS IN THE SERVICE OF COMMUNISM

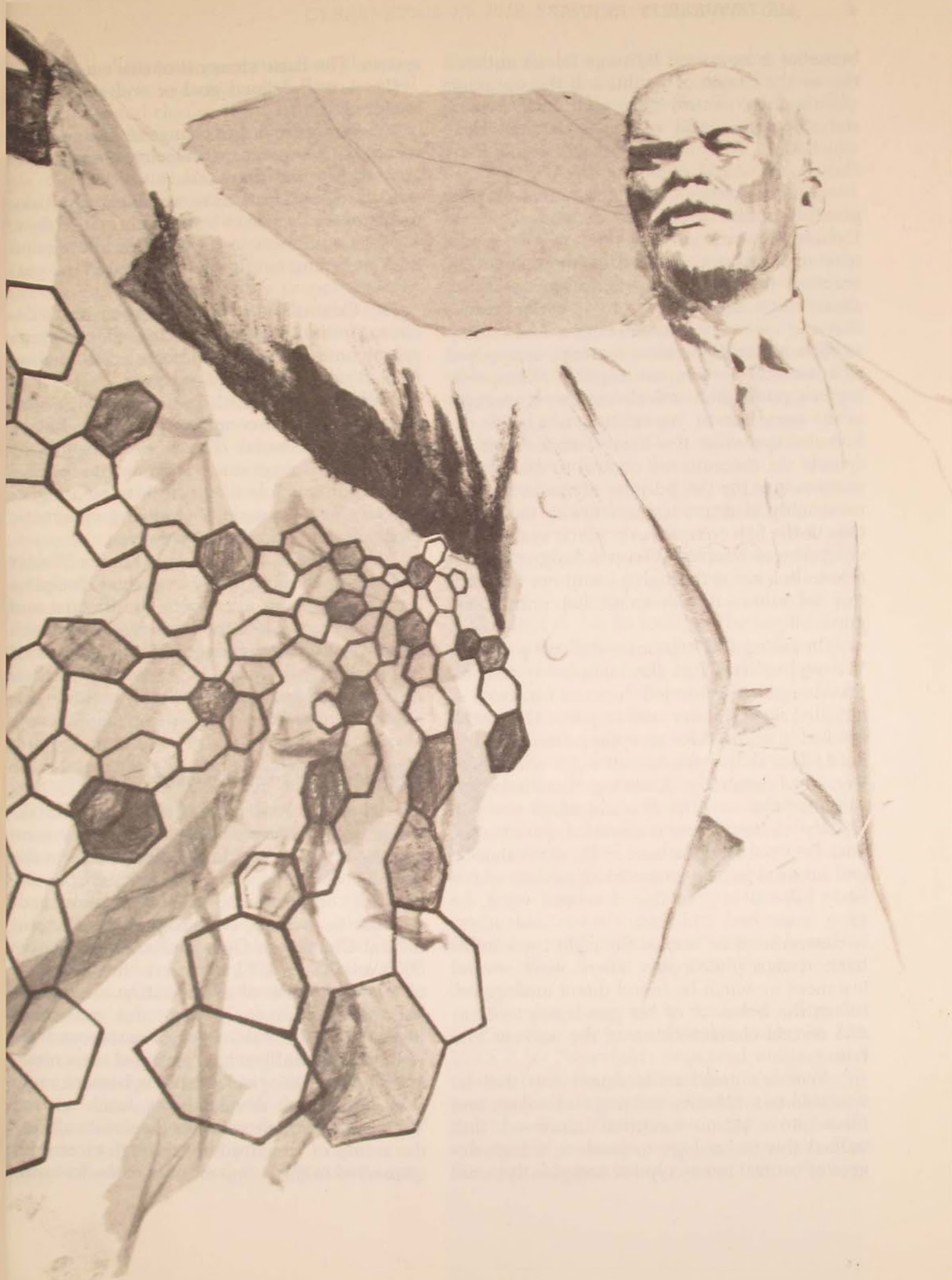
COLONEL RAYMOND S. SLEEPER

THE SPEARHEAD for the spread of Communism was forged in the Soviet Union when Lenin seized power and began to use this philosophy as the rallying standard for achieving world Communist domination. The Soviet Union's progress from the revolutionary chaos of the early Twenties to the space-age discipline of the Sixties has been phenomenal. In response to a series of difficulties and events in attempting to accelerate this task, the Soviets have borrowed and adapted to their use a unique and powerful philosophical and technological tool—cybernetics.

the promise of cybernetics

This tool seems to offer the means to optimize the continued development and growth of the power of Soviet Russia, the subversive capture of free nations, and the establishment of worldwide educational, technological, military, and space superiority. But more important, cy-





bernetics is now seen by some Soviet authorities as the means of facilitating the optimum (Communist) control of the complex system of states, peoples, and resources of the world which the Communists hope will result from Communist world domination.

Simply stated, cybernetics involves purposeful control of complex dynamic systems. Dynamic systems are those systems which can react to or adapt to a changing environment. In practice, the Soviets appear to be classifying almost any subject that has to do with information and control in man, machine, and society as cybernetics. Cybernetic systems, as opposed to automatic devices, are capable of responding in a predictable orderly manner to changes in the environment. An example of a crude cybernetic system is the home furnace that responds via thermostatic control to changes in temperature for the purpose of maintaining a reasonably constant temperature in the home. One of the first complex cybernetic systems developed was Norbert Wiener's design of a system to link radar through a computer to a battery of automatic fire-controlled antiaircraft guns.

In facing this extremely difficult problem, Wiener realized that the complex system he was designing performed the same functions as a skilled skeet shooter who acquired the target, tracked it, allowed for an appropriate lead, and fired. The skilled marksman achieved a high degree of accuracy. Knowing that biological systems (man or animal) could adapt easily to rapidly changing environmental parameters, both external as in the case of the skeet shooter and internal as in the case of an athlete whose body adjusts to give him a second wind, he often consulted with neurologists and others to determine if he was on the right track in his basic design philosophy. There were several instances in which he found direct analogs between the behavior of his gun-laying systems and certain characteristics of the nervous systems.

Wiener's great achievement was that he was able to synthesize existing technology and ideas into a basic conceptual framework that unified this technology to produce a high degree of control in any type of complex dynamic

system. The basic elements of this concept are

(1) A well-defined goal or end state to be achieved.

(2) Sensors to detect changes in the environment, i.e., temperature, velocity, chemical reactions, learning states, etc.

(3) Communications nets connecting all elements of the system to assure information flow.

(4) Logic units to process the information flow according to criteria contained in the goal (1).

(5) Control units that are responsive to decisions from the logic center (4), which adjusts system units to the desired states as information from (1), (2), (3), and (4) changes.

Wiener felt that this scheme was basic to the control of all complex systems—technical, biological, or social. The Soviets regard the U.S. PERT management system, or the "critical path technique," as they call it, to be a highly sophisticated example of applying cybernetic theory to an administrative system.

Cybernetics, as it developed under Wiener and in the U.S.S.R., imposes a rigid discipline for clear thinking upon both the theorist and the practitioner. If a true cybernetic approach to problem solving is adopted, the planner must first define his goals and criteria for their achievement as clearly and with as little ambiguity as possible.

the thrust of cybernetics in the Soviet system

The thrust of cybernetics in Russia extends from the microbiological to the macrocosmic dimensions of man's relationship to the elements of the universe. The volume of Soviet literature on cybernetics is monumental. Academician A. I. Berg, chairman of the Governmental Council on Cybernetics, refers to over 5000 articles in 1961 alone on "the problems of the application of mathematics, electronics, and cybernetics to biology and medicine." Since 1961, the volume of literature and research on this subject has continued to increase.

On the biological side of cybernetics one sees interesting developments, such as the "iron hand" which attaches pneumatically to the stump of the arm and, through electrodes connected to the stump muscles of the forearm,

picks up myocurrents generated from the contraction of these muscles, which then control the opening and closing of the hand. There are many other devices which link the nervous system to machines, and vice versa. One example is the biostimulator, which uses the recorded muscle movements of a sharpshooter to provide programmed electronic sleeves for automated rifle training instruction. This device is slipped over the arms and torso and electronically "stimulates" the proper muscles of the student soldier to emulate the sharpshooting techniques of an expert rifleman recorded in the simulator. Another device, the Soviet sleep machine, is claimed to produce a relaxed state, or sleep, which provides more rest than an equivalent amount of normal sleep. This device is used in medical treatment for a variety of symptoms. Soviet cybernetics includes, in addition to biologic and physiologic control techniques, a broad program of research in neurology, psychology, and related fields, especially those areas which have the potential for technological application and behavior control.

The Soviet concept and program of the "new man" involves the "creation" of a wholly superior type of individual. It begins with the separation of numbers of young children from their families at the ages 1 to 6 years. These children are trained in some 800 special boarding homes and schools, separated from their families. Estimates vary, but it appears that 1,500,000 to 2,500,000 children have been entered into this program. The training and education of these selected children has been called the "technocratization of youth" in Russia. In other references the Soviets have called this program the preparation for "the rationalization of world economics and cybernation." The U.S.S.R. is thus planning for rapid development of automation and encourages, promotes, and fosters cybernetics at the highest level of government and party. Social adjustment to automation is planned through the preparation of students to accommodate to the "cybernated society." And, according to the Soviets, the change will therefore be more orderly in Russia than in any other country.


At the machine level, the applications vary

from guidance systems for missiles to automated power distribution centers for controlling the flow of electric power between widely dispersed nets so as to eliminate costly, redundant power generation.

But it is at the socioeconomic level that one sees the major innovations being attempted in the Soviet Union. A cybernetics center is planned for each state. Several are already being built, and the first one at Kiev is nearly finished. These, together with the Cybernetics Council in Moscow, the Moscow information storage and retrieval center (VINITI), the Moscow computer center, the developing nationwide unified information network, some 350 computer centers, and over 100 institutes that are working in cybernetic science and technology, if built as planned, will constitute the physical structure of the program. A typical center such as the one at Kiev will have mathematicians, physiologists, psychologists, sociologists, neurologists, economists, electronic scientists, engineers, and physicists assigned. Thus a very broad multidisciplinary scientific force will attack the problems involved in the automation of Soviet society. The implications of such an enormous undertaking cannot possibly be seen with clarity at this early date, but it deserves serious observation, study, and attempts at interpretation.

It helps us some in taking a serious view of these Soviet activities when we realize that such very large modeling and attempts to structure society are actually beginning here in the United States. San Francisco is using an operating mathematical model of the city in terms of its land, buildings, peoples, jobs, amenities, etc. This model is being used for forward planning, and other U.S. cities are now developing their own models. But the Soviet scheme involves all of Russia and promises to involve the world.

One interpretation of the Soviet effort describes the purpose of cybernetics in the U.S.S.R. as "threefold: improved military and civilian technology, rationalization of the economy, and mechanization of intellectual tasks."¹ But it is likely that the main thrust of Soviet cybernetics is much more encompassing. For the central argument of the Soviets is that cy-



bernetics can work only in a "socialist" society:

As distinct from capitalist countries where the various firms create, each for itself, separate automated systems of control, under socialism it is perfectly possible to organize a single, (integrated) complex, automated system of control of the country's national economy. Obviously, the effect of such automation will be much greater than that of automating control of individual enterprises.²

Probably this is the key to the major difference between the Soviet purpose in cybernetics and the purpose in the West. Not so much that the Soviets are already beginning to apply cybernetics to the optimum control of the entire Soviet society but that they are aiming to reconstruct society through the widest possible application of cybernetics and eventually to employ it as the principal system of Communist control of the world. Some observers of the Soviet scene have responded with ridicule; others have simply stated that such a grand scheme is impossible. Perhaps the most common reaction is that Soviet technology cannot possibly support such a plan in Russia, to say nothing of the world. It is normal among these latter observers to note that "the U.S. is still ahead in the design, analysis, and evaluation of complex and sophisticated systems . . . ; we are still ahead of Soviet technology in the fields of radar systems, television systems, telemetry systems; and still ahead of Soviet technology by a considerable margin in the design and manufacture of high speed computers with large memories."³

But there are indications of steady Soviet progress: "Soviet science is ahead in the analysis of random-processes of shooting and random process representation; Soviet science is generally superior to U.S. science in the fields of detection theory, parameters, prediction and estimation, and the analysis of phase-keyed systems in the presence of fading; and Soviet science can be said to be slightly ahead of the U.S. sciences in the overall fields of cybernetics, logic algebra, automated theory, and pattern recognition."⁴ And cybernetics seems to have given the Russian leaders a new vision of the utopian future of Communist social progress. For they now see in cybernetics, they

think, a means to stimulate progress and to integrate advances in all fields of science. Again, the most fundamental and overriding point is that through cybernetics the integration of scientific progress now enables the construction of the ideal Communist society in Russia as well as throughout the rest of the world.⁵

To restructure the Russian society, to establish a system for the optimum control of Russia, and to embark upon the study, plan, and implementation of a control system aimed at the restructuring of the societies of the world so that they will dovetail into a cybernated Communist Russia is a fantastic task. The task was not undertaken lightly. A comprehensive study was conducted from 1959 to 1961 for the purpose of determining the broad structure of the program and its consonance with Marxism-Leninism. Then in June 1962 the Soviet Council of the Academy of Sciences, the Scientific Council on the Philosophical Problems of the Natural Sciences, and the Party Committee of the Presidium of the Academy of Sciences met together in a joint conference on cybernetics. Over 1000 participants represented all the sciences connected with cybernetics. This all-union conference mapped out the implementation of the tasks set for cybernetics by the 22d World Communist Party Congress.

The general structure of the program has been analyzed and ably presented by Professor John J. Ford of American University. He believes that the 20-year plan approved by the 22d Party Congress is designed to test and implement the model. The model and its application to Russia is to be largely tested by 1981. Subsequent indications strongly support Ford's analysis, e.g., a quote from the Technical Cybernetics All-Union Conference at Odessa in 1965: "Today, it is clear that the methods of technical cybernetics are finding growing applications in the control of the entire Soviet economy."

Anyone with a deep interest in Soviet developments who wishes to understand Soviet activities through the next 10 to 20 years must take into consideration the Soviet cybernetics model. Scholars who continue to employ traditional concepts of Soviet behavior will surely

be missing an important part of the picture.

The plan encompasses the development of a pattern for sociocultural, material-technical, and ideological subsystems. Each pattern must provide a "nervous structure" and "control center." Similarly, each must be automatically operative but adapted to the goals of the "brain." Harmonious transition of the parts toward a higher degree of centralized organization of social structure is thus insured.⁶

This 20-year plan is based on the thesis that social (and biological) change is inevitable, but more important, the social change should be purposeful and progressive (i.e., toward Communism). To quote Professor Ford:

The strategy for social progress dictated by this general model calls for the establishment of a "nervous system" to tie together the system's "sensors" of internal and external environments at all levels with the highest decision centers which can then determine optimal (in relation to system goals) courses of action and then transmit information to the effector organs of the social system (ministries, production complexes, schools, defense installations, people and so on). The cycle is then repeated. If the new behavior of the system brings it closer to the goals thereof as predicted, or moves away therefrom because the prediction was incorrect, the sensors once again detect the change and transmit the information upward in a continuous process analogous to that by which a helmsman steers a ship toward its destination.⁷

A model of world social structure seemingly visualized in this description is not attractive to most Americans, since it is deterministic and authoritarian. However, from a Communist viewpoint the whole process of "national liberation" and revolution involves the destruction of "capitalistic institutions" and the development and erection of Communist institutions in a purposeful mode.

*transition of "capitalist societies"
to "socialist societies"*

The transition of "capitalist societies" to "socialist societies" is the central aim of world Communism. It is the object, the content, and

the substance of Communist activities across the world.

There are Communist parties in some 105 nations of the world. In certain countries there are more Communist parties than one, but for our purpose we will assume these parties are factions and that ultimately these factions either coordinate, cooperate, or are controlled by the dominant party in their struggle for take-over of the specific country.

Some 16 of these 105 nations are now controlled by the Communists. Each of the 16 is in fact ruled by the Communist Party therein. It is generally accepted that the world Communist movement is no longer monolithic but that polycentralism and a system of "World Commonwealth of Communist Nations" is evolving and expanding through subversive aggression.⁸ In spite of these and other doctrinal changes, a Marxist-Leninist model exists for the stages of Communist penetration and take-over in a target country. This doctrine elaborates five steps (called "stages" in Marxist-Leninist doctrine) in the "transition to a Marxist-Leninist Society":

Step One is infiltration into the target country and the formation of a Communist Party.

Step Two is the infiltration of Communist Party members into the target country's key institutions, parliament, political parties, unions, industry, communications services, police, military forces, and other important elements of the national life. The members who infiltrate the key institutions form units that are called fractions.⁹ When fractions are formed in most of the key institutions, a united national front is then organized to coordinate policy and action among all the fractions.

Step Three is the decision to seize power. According to the doctrine there exist both the objective and subjective situations in a target country. The objective situation is the current real-life situation in the target country. The subjective situation is the "power" of the Communist Party. Evaluation of this power involves assessment of the number of hard-core members and their deployment throughout the target country's key institutions, together with

the power that the members exert over the nation by virtue of the National Front. The doctrine states that when the subjective situation of the Communist Party is in favorable balance with the objective situation in the country as a whole, the decision is then made to seize power.¹⁰ This does not mean that an attempt to seize power is made at this time, but the decision is made. Then the action committees are organized and prepared for the eventual take-over. The process of determining the favorable revolutionary balance situation is obviously an extremely difficult and complex process. It is clear, for example, that the Communists misjudged the revolutionary balance in Indonesia at least twice in recent times.¹¹

Step Four is to seize power. This step is initiated with the announcement of the time when power will be seized—and the timing is critical. The action committees are then armed, and direct operations are initiated against the anti-Communist, non-Communist, or national power in being. Insofar as possible, the Communist Party attempts to present this "seizure of power" in the light of a national revolution, a national uprising, or some similar camouflage for the Communist take-over.¹²

Step Five is to consolidate the Communist control of the nation. This involves the progressive elimination of all anti-Communist, uncooperative control and influence in the nation and leads to the purges. This is the sort of operation we saw in China when Mao Tse-tung instituted his program to "let a hundred flowers of internal criticism grow," and then when internal criticism appeared the critics were eliminated.¹³ It is the type of purge we have seen in Cuba since Castro seized power.

It may be claimed that our model for Communist subversive aggression against free nations is too simple. Communist manuals, doctrine, pamphlets, and publications have devoted hundreds of thousands of pages to the elaboration of the tactics and techniques of take-over, or the "transition of power from the capitalistic monopolies to the working class," as they call it. The basic Communist bible, *Fundamentals of Marxism-Leninism*, devotes over 500 pages to the subject. There have been many

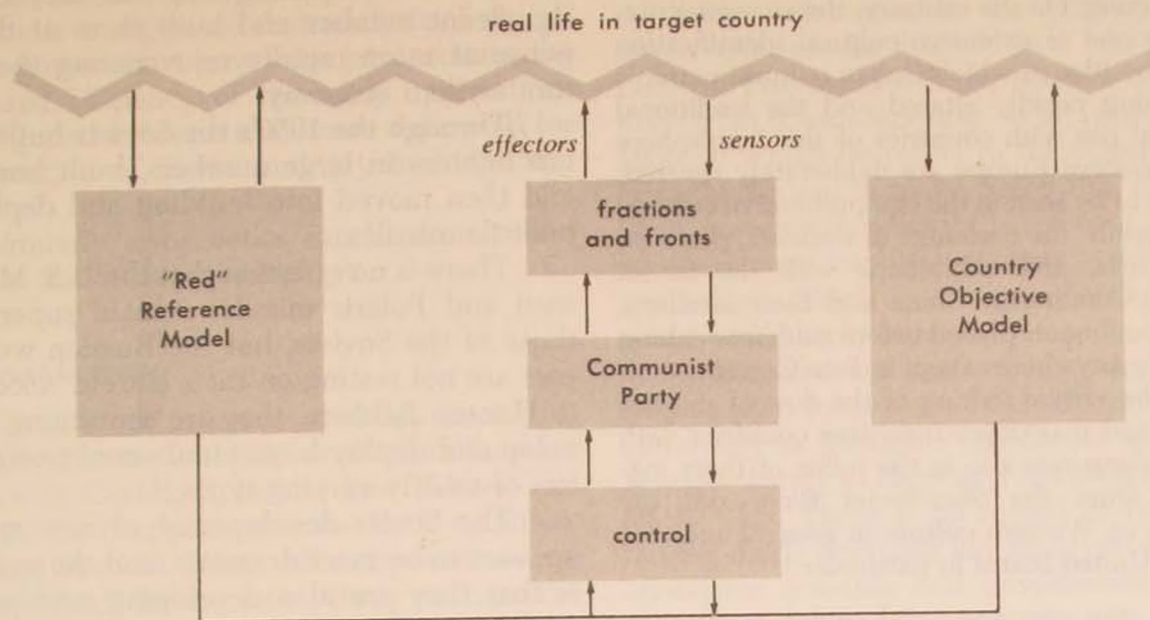


Figure 1. Model for Communist take-over

variations in this model, and there will be many more. But how can cybernetics serve Communist subversion and take-over?

The key step in the process is the decision and timing of the take-over. Note the relationship that must be satisfied for the Communist take-over: One could write this very simply as

$$P = \frac{S}{O}$$

where P represents potential for take-over, S the subjective power of the Communist Party in the target country, and O the objective situation in the country itself. Now it can readily be seen that experience will be necessary to determine the proper values of P for evaluating take-over potential. It can also be seen that the quotient of S divided by O is essentially a summation of the Communist potential for take-over in each of the key institutional structures as related to the stabilizing anti-Communist elements in the country. It is the problem of measuring Communist potential for take-over in a national power structure sense that "scientific programs" using statistics, content analysis, sociological and anthropological social structure analysis, and experience factors, that

we see as the task for cybernetics. The process can be shown as the objective situation deriving from real life in the target country feeding into the reference model (the Communist model) and with effectors and sensors from the Communist Party in its central role of subversion, take-over, command, and control, as shown in Figure 1.

The tremendous upheaval and social re-orientation of Cuba which have been produced by the Castro regime may be seen as an example of Communist transition of society toward a "higher stage of social evolution" and as a transition toward the Soviet model.

Through a series of trade and finance agreements the Castro Regime has moved toward the adaptation of Cuba's economy and industrial plan to that of the Sino-Soviet Bloc. . . . The degree to which Cuba has become economically dependent on the Bloc is evidenced by the fact that 80% of its trade is now tied up in arrangements with Iron Curtain countries. At the beginning of 1960 only 2% of Cuba's total foreign trade was with the Bloc.

Cuba, under the Castro Regime, is rapidly becoming oriented toward the Sino-Soviet Bloc. This orientation is not taking the form of a merely cultural interchange with communist

countries such as several Western countries are conducting. On the contrary, the emerging pattern is one of extensive cultural identification with the Bloc in which Cuban cultural patterns are being rapidly altered and the traditional cultural ties with countries of this hemisphere and Western Europe are deliberately severed. This is to be seen in the comprehensive cultural agreements, the exchange of students, performing artists, and exhibitions with the Soviet Union, Communist China and their satellites, the impediments placed before students wishing to study anywhere except in Iron Curtain countries, the virtual halting of the flow of movies, books and magazines from free countries with a commensurate rise in the influx of these materials from the Sino-Soviet Bloc, and the attacks on Western culture in general and that of the United States in particular.¹⁴

Thus one sees the total social, economic, and cultural restructuring of Cuba to fit the Communist model. Meanwhile, the Communist model appears to be moving toward a cybernetics model. This may lead to increased rationalization of Communist subversive aggression against free nations.

Under a cybernetic scheme the Communists need not export traditional ideology. Instead they need to export "scientific social changes" which fit the cybernetic model of the economy and sociological structure of scientific Marxism-Leninism now being built in Russia.

the drive for military superiority

The Soviets have consistently pushed for worldwide military superiority. Stalin supported this goal, and so did Khrushchev, on balance.

Some top American nuclear scientists believe that Soviet nuclear weapons technology is at least equivalent to if not ahead of U.S. in some areas. In the area of high-yield weapons it is conceded that they have the edge. They have demonstrated a device of 60 megatons which we believe could be weaponized or turned into a weapon at about a hundred megatons.

We were somewhat surprised in 1948 that the Soviets copied our B-29 (which they called

TU-4). More surprising was that they built a significant number and built them at the expense of more rapidly rejuvenating the war-torn civilian economy.

Through the 1950's the Soviets built modern fighters in large numbers, built bombers, and then moved into building and deploying ballistic missiles.

There is no question that the U.S. Minuteman and Polaris missiles remain superior to those of the Soviets, but the Russian weaponers are not resting on their laurels. According to Hanson Baldwin, they are continuing to develop and deploy large numbers of new weapons of widely varying types.¹⁵

The Soviet development of new missiles appears to be most dramatic, and the evidence is that they are also developing new aircraft (e.g., the AN22, a huge transport) and modernizing their army and navy. The 1965 spring military parade in Moscow and again the 7 November 1965 parade showed new generations of ICBM's, IRBM's, "global rockets," and anti-ICBM missiles, as well as many new army vehicles.

The Soviets apparently are building and deploying all these weapons. It is important that we recognize that they *can*, that they have the economic power to do so. In 1962 Secretary of Defense McNamara elaborated before Congress the new missiles, aircraft, antimissile missiles, agricultural improvements, and civilian consumer improvements that could be made by the Russians and then concluded that they could not do all these things—that they must make a choice. It would seem that they have made the choice at the expense of the civilian economy and that they have moved rapidly forward in strategic weapons.

One of the primary strengths of the Soviet R&D and production program is the use of scientific planning (cybernetics) throughout their weapons programs. Scientific planning, gaming theory, optimum solution of complex problems, development of block-aggregate computing systems, creation of the scientific basis for the synthesis of automatic control, and hundreds of similar subjects, all pertinent to the most modern techniques of scientific planning and development of aerospace weapon systems, ap-

pear in Soviet cybernetics literature.¹⁶ The hypothesis is suggested that analysis of overall Soviet power must now take into account the increased efficiency of the early applications of integrated cybernetic systems optimized for the creation of Soviet military and national security.

Similarly, cybernetics can be seen to impact on the Soviet space effort.

the thrust in space

Soviet work in space probably started in the early Forties with the work of Tsilkovskii, the Soviet Goddard. In the late Forties and early Fifties it appears that the basic technologies and vertical firings of components were accomplished. In the late Fifties we saw the first Sputnik and the beginning of the Soviet space spectacles. Figure 2 shows the Soviet concentration on spectacles—manned flight, near-earth orbital work, and some military and military support types of programs. There has been little direct evidence that any of these spectacles will lead to direct Soviet military

space capabilities, but there have been repeated Soviet references to the military uses of space. One of the first we saw was in Major General Pokrovsky's book, *Science and Technology in Contemporary War*, published in 1956, in which he refers to the coming importance of the war in space. Since 1957 there have been innumerable Soviet references to orbital bombardment, orbital rockets, rockets from spaceships, attack or delivery of weapons from space, and the like.

It would seem prudent to assume that the Soviets plan to use space for military purposes as rapidly as possible. The Soviet space effort is huge—surely as large as if not larger than that of the U.S. There is no record of the Soviets' having made anything like this type of effort in aerospace research and development without a resultant direct enhancement of their military power.

In the U.S. we argue variously that space offensive nuclear-delivery forces are less efficient than ICBM's, less accurate, and less credible. But when the Soviets are dedicated to offensive world objectives, the special effects

Figure 2. Soviet space firsts



earth satellite 4 Oct 57

biological satellite 3 Nov 57

solar orbit 4 Jan 59

lunar impact 13 Sep 59

lunar satellite photos 4 Oct 59

man in space (Gagarin) 12 Apr 61

"tandem" manned flight 11-12 Aug 62

Mars probe 1 Nov 62

3-man space flight 12 Oct 64

extravehicular operation (Leonov) 18 Mar 65

of space military offensive forces may appear very useful—namely, prestige, terror, persuasion, coercion, pressure, psychological warfare, and demoralization. The sight and sound of Soviet military orbital forces in the free skies of the world day and night, plus Communist satellite television propaganda tuned into sets around the world, would not be attractive to contemplate in the service of Soviet goals of worldwide Communist domination.

Such major steps in space could not be taken except for the progress that the Soviets are seeking through cybernetics. This has been recognized by Soviet scientists and has been openly stated by several. A description of the impact of Soviet cybernetics on their space program is included in V. Denisov's "Cybernetics and the Cosmos" (1962). Denisov describes the active flight of "The Cosmic Ship," its automatic control features, and its manual control features. But, "No matter what the degree of automation of the engineering process of controlling the cosmic ship, the managing and organizing role always remains with man. Hence, we must deal with complex cybernetic 'man-machine' systems in space ships. . . . Man is the controlling element or operator in the 'man-machine' system and the machine is the controlled object." Denisov goes on to describe the working of the cosmic ship in detail and then projects developments into the future: "It can be that the foot of man will not take the first step on other planets, . . . but the foot of a cybernetic automaton may." He then goes on to extend man's influence into the cosmos through travel and communications, basing his predictions on progress in cybernetics as well as in astronautics and related sciences.

IN CYBERNETICS there is unquestionably a promise for improvement of the welfare of all humans. Robert Theobald, author and economist, proposes a minimum basic income for all adults in America based on the use of cybernetics by U.S. industry and economy, an income ensuring a standard of living by which one can live with dignity. He also makes the astounding point that a modern na-

tion can produce anything it decides to produce.¹⁷ But Theobald decries the U.S. government's inattention to these "facts," stating that these facts demand new value systems in America.

There is not much question that cybernetics is seen by the Soviet elite not only as the path to Communist utopia but also as the road to development of a worldwide system of socialist states under Communist control. This view is reflected even by the American Communist Party.

Is there an inner compulsion in technological development which will transform the private appropriation of profit in America and the immense, unprecedented political power it brings, into an innocent surplus managed for the whole of society by the same small top group wearing different hats? . . . No . . . *Once the profit motive is no longer a sacred absolute, the machines can be controlled, and, especially in the centralized society of today, cybernation can be developed and applied at a rate and in a manner that is in the interest of society as a whole . . . and this will come . . . only when the American people make a daily struggle in a progressive direction [toward Communism].*¹⁸

If we wish to follow events in Soviet Russia and developments in worldwide Communism reasonably intelligently, we should begin to view them in terms of the changes wrought by the massive cybernetic program in Russia and in the worldwide Communist movement. Moreover, if cybernetics promises such a "paradise" for socialist countries and enables, in effect, a technological penetration of free nations, it behooves us to define the parameters of possible impact and the promise and direction of national and international automation in free societies as a counter. There is no doubt at all that American computer technology, program theory and application, and automation lead the world. But the proliferation of computers, computer languages, and computer centers has become truly an electronic Tower of Babel. In contrast, in Russia the computer centers, languages, and networks are planned and programmed to optimize control of the entire country. Does this lead to an efficiency of resource utilization

that enables the Soviets, with a gross national product in 1965 of \$303 billion—compared to \$664 billion for the U.S.—to challenge the U.S. for world leadership and military superiority? Surely the American system with its redundancy, flexibility, and free choice is much more attractive to us, but is it too wasteful of resources? And is this American redundancy and flexibility optimized to meet aggressive, purposeful international competition? Will truly wide redundancy, flexibility, and choice invite penetration and restriction by a centrally controlled, integrated, and optimized system—a system optimized for the announced goal and program of world domination?

These are interesting questions that only time and intensive analysis will answer. Most Americans, if given the choice, would vote for the redundancy, individualism, flexibility, and optimization of private opportunity as opposed to the centralized authoritarian-imposed optimized control. However, the parameters of redundancy, individualism, flexibility, control, optimization, purposefulness, and private opportunity may have to be subjected to the burning crucible of public discussion and definition in the light of national interests before we have a national understanding of both

the benefits and penalties of the promise of cybernetics to America and their portent in the world arena.¹⁹ We cannot begin to discuss and understand the national and international potential of cybernetics unless we devote adequate effort to the job. And this we are not doing—at least, not at a level of effort that is competitive with the Soviets.

The Soviet effort and progress are a definite technological threat to the U.S. because their multidiscipline attack on major problems has no counterpart in the U.S., and their broad intensive effort simply must produce, in due course, significant breakthroughs in sociological, economic, governmental, and military areas that we in the U.S. must be prepared to meet. This threat is, therefore, a challenge to military superiority, to social control, to economic/industrial advance, and to world power.

Unless we Americans as a people, and we in the Air Force in particular, understand these momentous trends, we may not have much choice. The system could be imposed upon us from an authoritarian, centralized, cybernated, world-powerful command and control center in Moscow.

Foreign Technology Division, AFSC

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9. "Party Fractions in Non-party Organizations (Fronts)," International Press Correspondence (INPRELOR), 27 February 1924, and V, 25 (April 1925), 340-43.
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18. Richard Loring, *Communist Commentary on the Triple Revolution* (Los Angeles, California: Progressive Book Shop, May 1964). (Italics are the author's.)

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DEFENCE RESEARCH PROGRAMS

DR. A. H. ZIMMERMAN

*Chairman, Defence
Research Board, Canada*



CANADA'S first defence scientist was undoubtedly a French soldier assigned to examine and effect repairs to a faulty muzzle-loader about three centuries ago.

We have progressed substantially since that near-medieval period, however, although Canadian defence scientists were not formally organized until 1 April 1947 when an amendment to the National Defence Act created Canada's Defence Research Board. For twenty years now, DRB has been an integral element in the Department of National Defence and probably unique because it is civilian-directed and civilian-staffed, despite its place in a military milieu.

Under the National Defence Act, the Board carries out research and associated duties relating to the defence of Canada and the development of or improvement in military equipment as assigned by the Minister of National Defence. It also advises the Minister on all matters relating to scientific, technical, and other research and development that, in its view, may affect national defence.

Integration of the Canadian Armed Forces two summers ago has not resulted in major changes in the Board's operations or its place in the Department as a separate organizational entity.

There exists within the Department of National Defence a Defence Council, chaired by the Minister, and its members are the senior officials of the Department. These include the Chief of the Defence Staff, the Vice Chief of the Defence Staff, the Chairman of the Defence Research Board, and the Deputy Minister of National Defence.

The Deputy Minister and the Chairman, Defence Research Board, are the senior civilian appointees in the Department under the Minister. The role of the Deputy Minister may be broadly stated as the principal civilian assistant to the Minister and Associate Minister in the exercise of their responsibility for the control and management of the Department. The Chairman, Defence Research Board, is charged with the responsibility of operating the scientific element of the Department of National Defence.

As a result of his membership on this

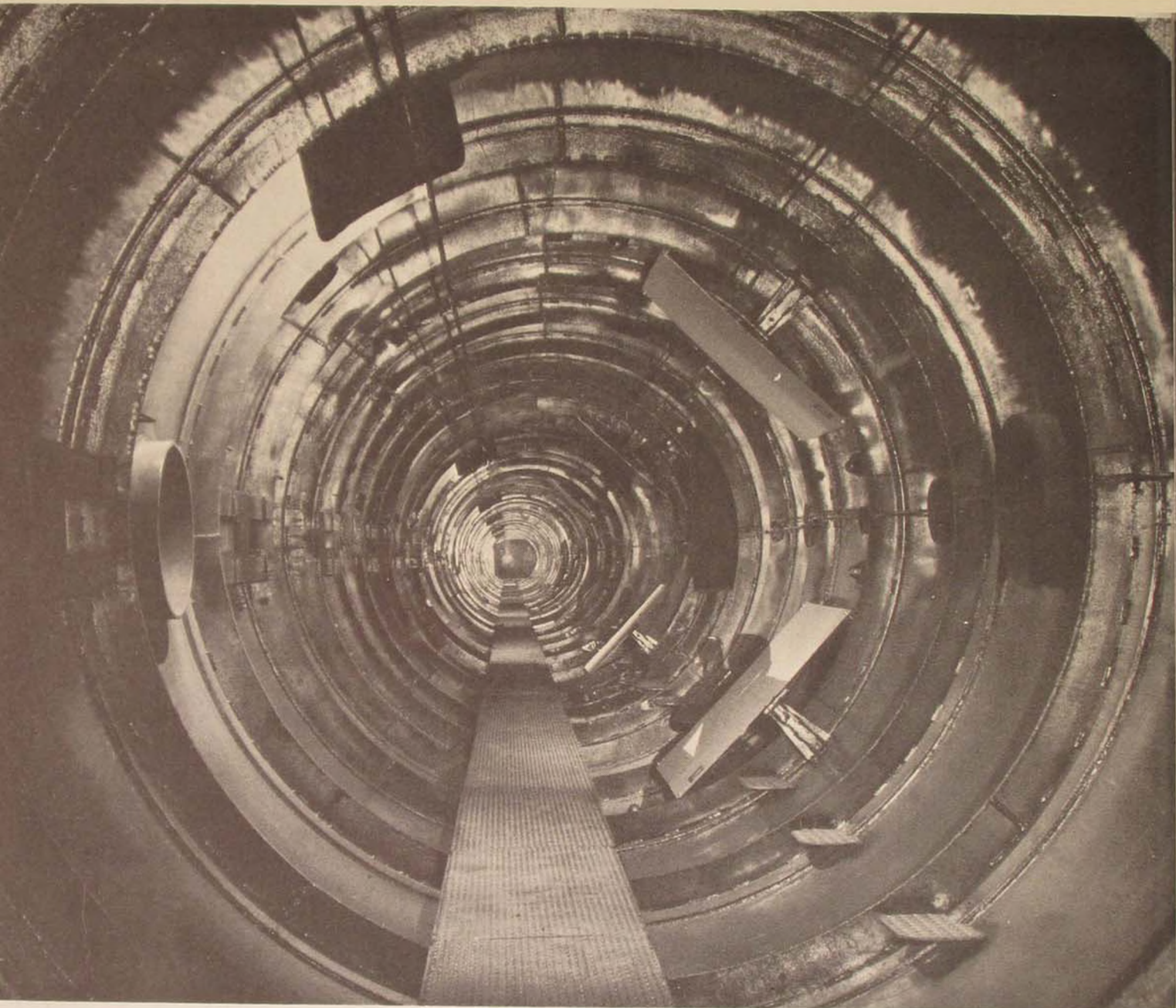
Council, the Chairman of the Defence Research Board is able to introduce at the highest departmental level the views of the Board.

The Board's Vice Chairman and Chief Scientists are members of the Development and Associated Research Policy Group formed by the Chief of Technical Services, Canadian Forces Headquarters, to make recommendations to the Chief of the Defence Staff on all matters concerning development policy and programs. The Group provides an important forum for the exchange of information on all aspects of defence research and development. Its secretariat and administrative procedures provide a convenient and effective means of both proposing research and reporting progress to the working staff.

In addition, a number of Board scientists have been integrated into the Chief of Technical Services' organization, which is responsible for the planning and integration of development programs. Somewhat similar arrangements have been concluded to provide for scientific advice in the formulation of operational requirements, and a senior DRB scientist has been posted to the branch of the Vice Chief of the Defence Staff as Director of Scientific Co-ordination.

The Chief Superintendent of the Board's Operational Research Establishment is also Director General of Operational Research at Canadian Forces Headquarters. He heads a single division, organized into a number of functional directorates, and is responsible to the Board's Chairman for the career management of scientific staff and the technical quality of operational research studies. Through the Vice Chief of the Defence Staff, he answers to the Chief of the Defence Staff for the formulation of programs and the establishment of priorities for their execution.

The Board's research and associated activities are carried on at its headquarters and at its laboratories or field stations located in Nova Scotia, Quebec, Ontario, Saskatchewan, Alberta, and British Columbia. The terms of the National Defence Act also permit the Board to extend its efforts beyond its own facilities by means of grants to universities and contracts with industry.



Hypersonic Range 5 of Canada's Defence Research Board, viewed from the launch end

In practice, the Board has four basic responsibilities:

(a) to provide scientific advice to the Minister and Associate Minister of National Defence, the Chief of the Defence Staff, and the Canadian Forces;

(b) to provide for the research requirements of the Canadian Forces;

(c) to contribute to the collective defence

research efforts of the North Atlantic Treaty Organization, of other international programs, and to arrange for scientific and technical cooperation with allied nations; and

(d) to support basic research of defence interest in Canadian universities, and applied military research with Canadian industry.

Programs and priorities within these broad responsibilities are determined by Canada's

national security policy, by the current roles and tasks of the Canadian Forces, and by the requirements of international cooperation. Present areas of special interest include:

- (a) the defence (and in particular the air defence) of North America;
- (b) defence against submarines;
- (c) the equipment and tactics of ground and air forces in Europe;
- (d) the equipment and tactics of forces in counterinsurgency, limited war, and "peace-keeping" roles;
- (e) the requirements of national survival following nuclear attack.

The Board's research efforts can be divided roughly into five major fields—the physical sciences, maritime research, weapons and engineering research, biosciences, and the defence aspects of nuclear, biological, and chemical research—all contributing singly or collectively to many of the problems that arise in the areas already outlined. In general, the research programs, both pure and applied, are pursued in the Board's research establishments or laboratories located across Canada, some selected specifically of course for their geographical position.

The majority of the Board's research programs are integrated closely with those of the United States. This integration arises for many reasons: because of the geographical implications, mutual defence problems, and also because of the need to share specific equipments and facilities. The nature of this cooperation varies considerably, from the discussion and design of programs at formal international levels to mutual exchanges and understandings at the working level between field stations with related tasks. This type of cooperation has resulted in the sharing of facilities, staffs, and equipment. Many examples of this type of liaison exist, particularly in some of the Board's extended field operations such as at-sea research or in the execution of some of its large-scale trials in the area of biological, chemical, and nuclear defence.

In addition to the exchange of technical information at the working level, an effective procedure for the exchange of information through reports and documents has been es-

tablished. This system originated during the early days of World War II and has progressed to an extensive degree. It ensures in fact that Canada's defence research scientists fully understand activities in U.S. allied fields. The system, of course, works just as successfully in reverse.

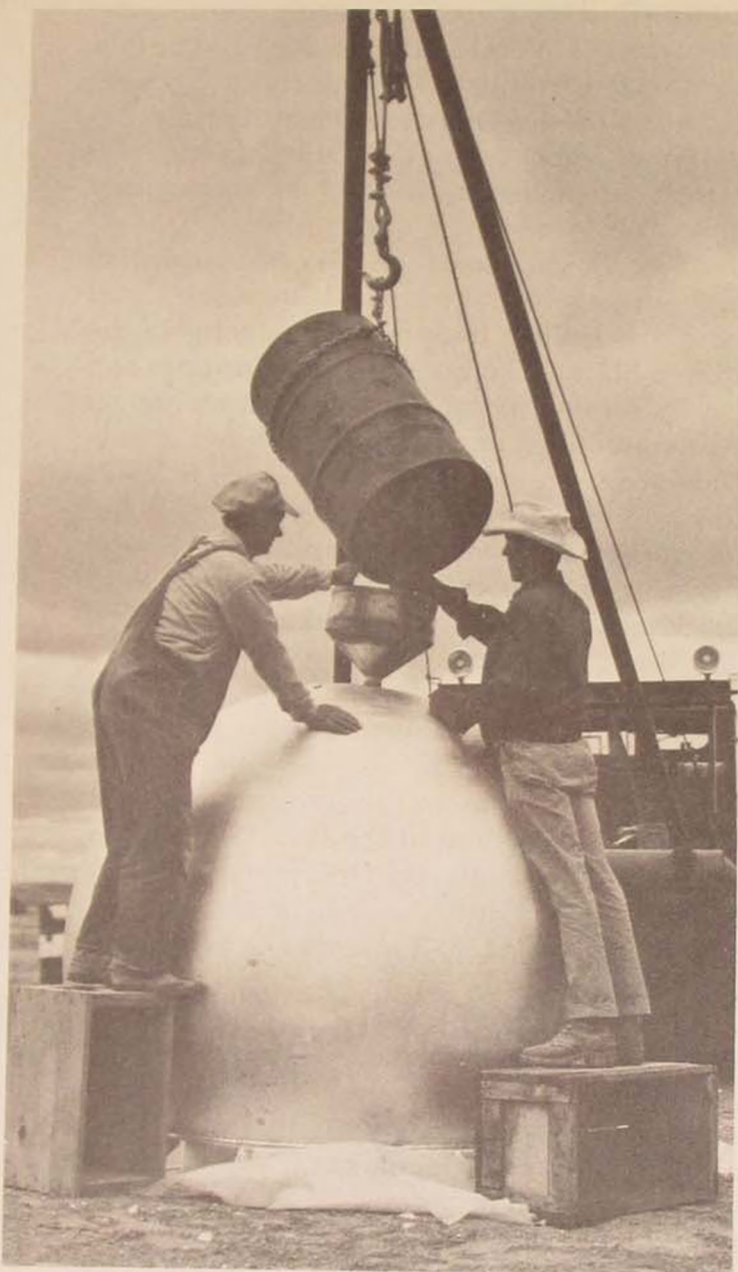
The Board's scientists also take an active part in seminars, technical meetings, and symposia held in their respective fields in the United States. The Board presents reviews and papers on all aspects of its work at an annual symposium held in Ottawa. This draws a wide audience from many defence science fields in the United States. It is not surprising, therefore, to find that some of the strongest and most fruitful programs are those closely allied with similar activities in the United States.

It might prove useful to present some typical examples of the close collaboration existing between the two countries in nearly all defence research fields.

In the weapons and engineering field, one of the main programs at the Board's Canadian Armament Research and Development Establishment involves the use of hypersonic ranges and light-gas guns. This program, to investigate the properties of hypersonic wakes, has developed over several years in close cooperation with the Advanced Research Projects Agency and Redstone Arsenal of the U.S. Army Missile Command. The U.S. provides substantial financial and personnel support to the program, and of course scientific information resulting from the experimentation is exchanged freely.

The same establishment is engaged in another cooperative project with ARPA, investigation of infrared radiation in the high atmosphere, particularly transmission and airglow measurements carried out by instrumented high-altitude aircraft. Here again Board personnel receive logistic support from their United States partners.

During the past twenty years the Board has built up extensive and unique test facilities at its Suffield Experimental Station on the Alberta prairies. The ranges are ideally suited for large-scale tests and trials dealing with the problems of defence against biological, chemical, and nuclear weapons. This establishment



Canadian and U.S. technicians at DRB's prairie research station fill a radome with sand preparatory to testing the ability of military equipment to withstand the shock effects of detonating a 100-ton charge of TNT.

has conducted joint Canadian/United States trials for a number of years, with every likelihood that the degree of U.S. participation will increase. It has not been unusual during a specific trial at Suffield to find more than 100 U.S. technical representatives participating.

In other research areas, such as submarine

warfare, communications, and biosciences, mutual projects between the two countries have resulted in very close collaboration.

The Board's main contribution to Canada's space program is another instance of close and successful cooperation with our U.S. counterparts. This effort began with the concept and eventual launching of the Alouette I, an all-Canadian ionosphere topside sounder spacecraft, which established clearly the Board's ability and competence in this complex and sophisticated design and development field. Design and manufacture of the satellite of course represented only one aspect of the problem. The other aspect, that of launching it into orbit, was a phase that was entirely contributed and directed by the resources of the U.S. National Aeronautics and Space Administration.

Since that successful launching, a joint Canada/U.S. program known as International Satellites for Ionospheric Studies (ISIS) has been established with the objective of orbiting four Canadian-designed and -built topside sounding spacecraft. The first satellite in this program, Alouette II, was launched successfully by a Thor-Agena on 29 November 1965 from the Western Test Range in California. Designed and built by the Board's Defence Research Telecommunications Establishment with Canadian industrial support, it achieved a nominal orbit with a perigee of 501 km, an apogee of 2982 km, and an inclination of 79.8°. Alouette II carries equipment for five experiments: three (topside sounding of the ionosphere, measurement of galactic and solar radio noise, measurement of very-low-frequency radio emissions in the upper atmosphere) are DRB experiments; the fourth (detection of energetic particles) is a project of the National Research Council of Canada; and the fifth (measurement of electron densities and temperatures) was designed by the U.S. National Aeronautics and Space Administration. Like its predecessor, all of Alouette II's systems are operating satisfactorily to date.

Explorer XXXI, a NASA satellite, was launched by the same Thor-Agena rocket. For experimental purposes, the two satellites remained in the same orbit for about a month, separated along the orbital path by less than

1000 kilometers. Fifteen days after launching, the separation was 83 km and was increasing at a rate of about 9 km per day.

Both Alouette II and Explorer XXXI are part of the Isis project, and many of the experiments in the two satellites were planned to be complementary. Their simultaneous operation in the same region of space is expected to make possible a considerable advance in knowledge of the physics of the atmosphere, ion composition, and electron and ion temperatures.

Leading from the experience and success gained with Alouette I and Alouette II, the Board is developing a program for cooperative studies for communications satellites, again with considerable U.S. cooperation.

The breakthrough into space research by the Board has added a new dimension to Canada's industrial capacity. As a result of the Board's interests and requirements, encouragement and support have been extended to many Canadian industrial firms to develop and expand their technical resources to meet the challenge of space. From modest beginnings, many of the companies have developed equipments and components which are now finding their way into U.S. space vehicles.

Although the Board does not operate an aeronautical establishment, it has encouraged the development of work in this area through a system of development contracts with industrial manufacturers. In the late 1950's concepts and feasibility studies of v/STOL aircraft were supported by the Board at the Canadair Limited plant in Montreal. Emphasis in this early work was placed on optimizing the means of coupling aerodynamic and direct lift devices as well as on solving stability and control problems.

On the results of this research, the contractor has designed and developed a prototype v/STOL aircraft designated the CL84 "Dynavert." Although DRB engineers were involved also in an advisory capacity during the prototype construction phase, the actual costs of production and flight tests were supported by Canada's Department of Defence Production. The Dynavert is a research aircraft incorporating the hybrid tilt-wing deflected-slipstream concept. Since its first flight in May



A 500-ton mound of TNT was detonated at DRB's prairie research station in 1964, with U.S. scientists and officers participating. The experiment yielded information on shock and blast effects of such explosions.

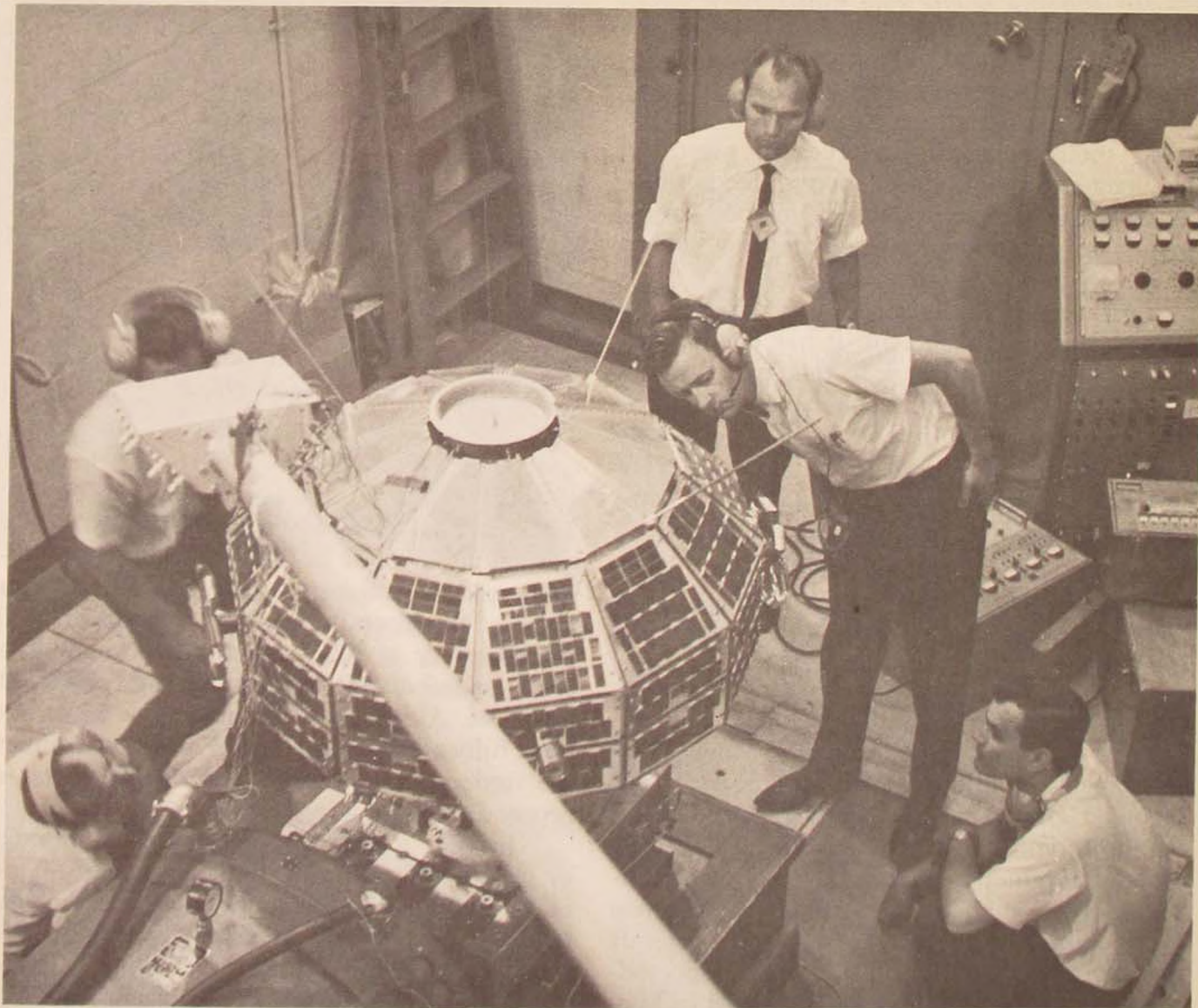
1965, it has been flown successfully in the normal flight mode as well as through all hovering and transition requirements. The design point of the aircraft is a VTOL payload of 1500 pounds over a 300-nautical-mile range at a cruise speed of 200 knots on a hot day (95°) at sea level. Although these objectives have not been fully attained, means for additional thrust are under consideration, and development is proceeding satisfactorily.

In 1961 a program of research assistance or grants was initiated with a wide segment of Canadian industry to broaden research in Canada, particularly in areas relating to defence technology. This program has had remarkable results in a short time and has led

to the encouragement and expansion of basic and applied research in many areas of Canadian industry. New facilities have been built and research staffs hired and trained to support the many projects under way. The program is operated on a cost-sharing basis, the Defence Research Board grant being matched by an equal financial contribution from industry. Since its inception some 167 grants have been awarded, and the total shared cost amounts to approximately \$46 million.

Within the past year this Defence Research Board Industrial Research Sharing Program has been extended as a result of an agreement with the U.S. Air Force. This recent venture is designed to encourage Canadian defence-oriented industry to participate in programs of interest to the USAF. Although a comparatively new arrangement, already several successful jointly funded projects have been established, and there is every indication that others will be initiated this year.

Canada's second ionosphere sounding spacecraft undergoes a vibration test. Like its predecessor, this spacecraft was designed and constructed by the Defence Research Board and launched in collaboration with the U.S. National Aeronautics and Space Administration.





The CL-84 Dynavert, a VTOL craft developed jointly by Canadair and the Canadian Department of Defence, can rescue one to three men at a time from ground or water.

Since the DRB was formed in 1947, it has operated a very successful grants-in-aid program with Canadian universities. The prime purpose of the program is to initiate and encourage research in institutions of higher learning and thus strengthen the heritage of research

in Canada. About 330 grants are distributed annually among some 34 universities across the country. The annual expenditure for these grants is approximately \$2.5 million.

The Board participates in a large number of international scientific activities arising principally from military and political alliances abroad. Many of these stem from NATO operations. The Board sponsors defence research scholarships which are offered to scientists from NATO countries and are tenable for a minimum of one year in any field of defence science in the Board's establishments.

The Technical Cooperation Program involves a considerable amount of cooperation with member countries—Canada, U.S., Britain, and Australia—and has proved to be a most useful and productive means of exchanging information and skills.

Canada is one of the strong supporters of the Commonwealth Defence Science Organization and acted as host to a meeting of the Organization held in Ottawa in September 1966.

A strong link is maintained in Washington, London, and Paris through the offices of the Canadian Defence Research Staff. These offices are responsible for all aspects of overseas operation and work very closely with the Canadian military components in these capitals.


During its brief history of some twenty years, the Defence Research Board has progressed in size and competence. As a leading partner in the field of Canadian research, it takes its place with other research agencies of the government, industry, and education. In addition, many of its staff and its programs have gained recognition in various fields of international science. These accomplishments are but a prologue to Defence Research Board challenges and achievements of the future.

Ottawa, Ontario

A sepia-toned illustration of a ship's deck. On the left, a large mast or structure features a Canadian flag with a maple leaf. In the foreground, a group of men in dark, heavy clothing are walking across the deck. The background shows a hazy, overcast sky and a distant horizon line. The overall style is that of a historical or documentary sketch.

CANADA IN NATO AND NORAD

JOHN GELLNER



UNTIL about three years ago, examining Canada's military posture in NATO and NORAD would have been of scant interest. Up to that time Canada did not have, did not want to have, and did not think it needed to have a defence policy of its own. This was an attitude of expediency made possible by the country's geographic position. For ever since 1871, when the Treaty of Washington removed whatever dangers came from the United States as the result of differences that had arisen during the Civil War, Canada was protected simply by being situated where it was. With the undefended border to the south, two vast oceans policed by the British navy on the flanks, and an impenetrable (in the then stage of technology) belt of arctic wasteland to the north, the country was, until the end of the Second World War, safe even if it did not lift a finger, militarily. After the war the assumption by the United States of the rights and burdens that go with being the paramount power in the world made Canada an indispensable strategic forefield which the United States must keep inviolate in its own interest. Again, Canada was made secure whether or not it looked to its own safety. This happy condition thus has prevailed practically ever since Canada became a separate political entity a hundred years ago. As a consequence, the Canadian military effort, whatever it was at any one time, was motivated by the wish (or the political necessity) to cooperate with allies, especially with Canada's protectors, rather than by actual need. Under these circumstances, a Canadian military policy tailored to Canada's own requirements had a hard time developing.

It would not have developed at all had the demands made upon Canada by its principals remained as simple and straightforward and enduring as they were until the end of the Second World War. Canadian policy, then, was to furnish ground, sea, and air forces organized, equipped, and trained to operate with other British and Commonwealth forces, under British direction. This was possible in conditions of conventional war conducted on classical lines which had been modified as a result of new means and new techniques but which as to general doctrine had remained

virtually unchanged since Clausewitz and Jomini. It was thus comparatively easy for Canada (as a second) to fit into the military setup of Great Britain (the principal).

Not so after the Second World War. The need to think on quite a different level, that created by the advent of weapons of absolute destruction, a level not precisely defined as yet, led to doctrinal uncertainties, and these, in turn, led to frequent and fundamental changes in military policies. In brief, it has become immeasurably more difficult to wield the sword effectively. And because the principal, for years after Hiroshima, has not been quite sure of his own bearings and is still searching for a steady military course, it has not been easy to be a good second, either. Indeed, the question has arisen whether it is at all possible, let alone practical, nowadays to play the role of military satellite pure and simple, as long as the dominant power has not determined a firm and enduring policy to follow. This question has been asked in Canada, as well. It is being answered by the attempt, initiated three years ago, to develop a Canadian defence policy based primarily on Canadian views and thus attuned not only to Canadian capabilities, the only criterion of the past, but also to Canadian needs.¹ Although this is a radical change of outlook, it has not yet been fully recognized as such, not even in Canada.

That Canada at long last is beginning to think for itself in the military field does not mean that it wishes to restrict in any way its cooperation with allies, above all with its military principal, the United States. The difference—it became observable in late 1963 and quite apparent when the "White Paper on Defence" came out in March 1964—is that Canada henceforth will consider *how* it should cooperate. It will no longer be the case of accepting a suggested role virtually sight unseen. Instead, the tendency will be for Canada to offer to its allies what it has in military power and what it thinks will be most useful, not simply what is requested. In practice, this will not make much difference in Canada's NATO commitments, at least not for the next few years, and it will perhaps not make any

difference at all in its NORAD commitments. Still, it is undeniable that there is a change of approach which could have practical consequences. It is this possibility that makes worthwhile our looking at Canada's present posture in NATO and NORAD and our conjecturing on what it may be in the years to come.

Canada in NATO

With some justification, Canada has been called the midwife of NATO. At any rate, Canadian interest in and support of the alliance has been unflagging. Indeed, Canada has consistently pressed for a bigger and better alliance that would extend its influence and its direct activities into the political, economic, and social fields (as was in fact envisaged, albeit somewhat vaguely, in Article II of the North Atlantic Treaty). Generally speaking, Canada has through the years been disappointed at times because NATO was doing too little, never because it was doing too much.

Canada has always fulfilled punctiliously its military commitments to NATO. As far as assigned forces are concerned, they amount to an air division and an army brigade group; and in earmarked forces, to the balance of ground troops to make up a full army division, and a number of warships and maritime aircraft. The current cost of the assigned forces stationed in Europe, as listed in the 1966-67 Estimates, is \$146,724,000 or a little over 10 percent of the military expenditures proper.² These forces number approximately 12,000, or about 11 percent of the Regular Force establishment. The share of No. 1 Air Division is \$71,703,000 and approximately 5500 officers and men.

Because of the totally passive Canadian approach to defence which prevailed in former years, the *kind* of military contribution made to NATO was until recently not seriously questioned, except by defence critics outside the government and government service. Beginning in late 1951, No. 1 Air Division was developed as a day-interceptor force equipped with F-86 Sabres, built in Canada under license. The division was complete by September 1953, with a headquarters in Metz, France,

and four wings of three squadrons with 25 aircraft each in North Luffenham, England, in Grostenquin, France, and in Zweibrücken and Baden-Soellingen, Germany. The Luffenham wing moved to Marville, France, in early 1955. From November 1956 onwards, one Sabre squadron in each wing was replaced by a squadron of Canadian Avro CF-100 twin-jet, two-seat, all-weather fighters. This gave the division a round-the-clock air defence capability. In all this, Canada furnished what SACEUR wanted. It must be admitted that, in the military situation in Central Europe during that period, it was a sensible and useful contribution.

The need to rearm No. 1 Air Division with more modern weapon systems arose at about the same time that NATO strategy swung sharply toward primary reliance on nuclear weapons. That this was the trend of thought in SHAPE was already pretty clear in early 1957. Field-Marshal Lord Montgomery, then Deputy SACEUR, expressed it with customary bluntness in a contemporary interview: "I want to make it absolutely clear that we in SHAPE are basing all our operational planning on using atomic and thermonuclear weapons in our defence. With us it is no longer: 'They may possibly be used.' It is very definitely: 'They will be used if we are attacked.'" The heads of government of the NATO countries, meeting in Paris from the 16th to the 19th of December 1957, then put actual muscle into an already existing strategic concept when they made the decision to stockpile nuclear weapons in Europe and put intermediate ballistic missiles at SACEUR's disposal.³

No. 1 Air Division was the first non-U.S. force selected to carry American nuclear weapons assigned to NATO. It was a sensible choice: the division needed rearming. Its primary role, day-interception, had become problematical in view of the potential enemy's greatly increased offensive capabilities in the confined airspace of Europe. It was an all-professional force of proven high performance, considered the only one that could be rearmed and retrained without being taken out of the line—an important consideration in the eyes of SACEUR, who had no forces to spare. Thus, in

1958, the (nuclear) strike-reconnaissance role for No. 1 Air Division was offered to Canada and accepted by Canada, apparently without demur from the Ottawa government.⁴ The carrier recommended was the F-104 Starfighter, which, modified and Canadian-built, became the CF-104. Here, there were objections on the part of the RCAF. They were technical in nature and entirely intramural, and they were overruled in the spirit of cooperating without asking too much as to the whys and wherefores. By 1959 the necessary decisions had been made. The first operational CF-104s were delivered to No. 1 Air Division in December 1962. At the same time the four CF-100 squadrons were disbanded. The division was henceforth composed of six strike squadrons of 16 aircraft each, two squadrons each at Grostenquin, Zweibrücken, and Baden-Soellingen, and two reconnaissance squadrons of 15 aircraft at Marville, a total of 126 Starfighters.

It is debatable whether forming strike squadrons in NATO for tactical operations with nuclear weapons was ever sensible. Certain it is that by the time No. 1 Air Division got its first Starfighters U.S. strategic concepts (and thus, necessarily, those of NATO) had changed so much that maintaining forces of weapons carriers of that kind did not make any sense at all. Already in 1961 the United States had made it clear that it had moved away from the idea of using nuclear arms at once, at any level of conflict in Central Europe. "The current doctrine," said U.S. Deputy Secretary of Defense Roswell Gilpatric,⁵ "is that if NATO forces were about to be overwhelmed by non-nuclear attacks from the Bloc countries, NATO would make use of nuclear arms." This was a long way from Field-Marshal Montgomery's dictum of 1957. By 1962 the doctrine of flexible response under central control had been enunciated. The NATO Starfighters, which perhaps could be thought to have a military value—at any rate a deterrent one—as long as they were potential first-strike weapon systems, became totally ineffective once they were relegated to a second-strike (or rather umptieth-strike) role. Bunched together at the end of extra-long airstrips, airstrips undoubtedly surveyed to the last hundredth of an inch on the

Canada and NATO

Canada's land, sea, and air support of the North Atlantic Treaty Organization has consistently been ample and enthusiastic, recently totaling more than 10 percent of her total military force and expenditure. Attesting to her air support is this two-page pictorial inventory of Canadian aircraft serving or available to NATO missions or exercises.



Canadair Yukon



Lockheed Neptune



Canadair Argus

Lockheed CF-104 Starfighter





Grumman Tracker

Sikorsky Sea King



maps used by the strong Soviet nuclear rocket forces only a few hundred miles away, the Starfighters would surely be destroyed on the ground in the enemy's first, surprise attack. They do not even deter under a strategy of flexible response: they are too obviously sitting ducks. There is no need even to go into the largely theoretical arguments: that limited nuclear war is impossible, especially on the continent of Europe; and that even if it were possible, there would be no reasonable targets (i.e., important ones, yet not likely to lead to escalation if attacked) in that overcrowded area for the 60-kiloton or heavier atomic bombs of the CF-104. Where a war is to be kept nonnuclear as long as possible, there is just no place for a highly vulnerable nuclear weapons carrier of the Starfighter genre.

In the meantime, though, the CF-104 program has run its course. It was the biggest single armament program ever undertaken by Canada in peacetime. The 238 aircraft (200 single-seat combat, 38 two-seat trainer) have cost \$463,762,000. The training of pilots for them has been the most expensive ever—an average of just under \$440,000 per man to full operational standards. Ground installations and support equipment have been equally costly. It would be no exaggeration to say that Canada has up to now spent something like one billion dollars on its CF-104 force.

Various attempts have been made to give to this "white elephant" some military value. The possibility was studied of putting the aircraft onto hardened sites from which they would be launched by catapult. This might have given the CF-104 force a second-strike capability. Unfortunately, estimates showed that the cost of such a conversion would be unwarrantably high. For a much more modest sum of money, the strike aircraft of No. 1 Air Division were adapted to carry conventional bombs. This role has been likened to a bakery's delivering bread from house to house in a racing car. In any case, it does not solve the problem: the enemy would still be certain to take out the CF-104 bases in his first strike, as he could not know whether the counterattack would be made with nuclear or conventional weapons.

With all this, it is no ground for satisfaction that the still available 166 CF-104 combat aircraft are likely to last No. 1 Air Division for a long time. Attrition has been lower than anticipated; it has lately been at the rate of four total losses a year. At the same time, the number of aircraft the division requires will decline. When Marville is vacated in accordance with the French eviction order of 29th March 1966—Grostenquin was abandoned some time ago when France forbade the stationing of foreign nuclear weapons on her territory—No. 1 Air Division will operate only six squadrons, four strike and two reconnaissance, from the two remaining bases in Germany, Zweibrücken and Baden-Soellingen.⁶ The squadrons will then be augmented to 18 aircraft each, but this still makes a first-line strength of only 108 aircraft as against an inventory of 166. In theory, then, Canadian CF-104s could be kept flying in European skies for perhaps as much as another eight years—very efficiently, as they have been so far, but without much military purpose.

The CF-104s of No. 1 Air Division provided one of the traumatic experiences that have led Canada to re-examine its traditional policy of military cooperation with a minimum of its own initiative. It also illustrates the point made earlier, that in these days it is very difficult for a military satellite simply to follow the leader. For what happened is that No. 1 Air Division is now equipped to conform to the one-before-the-last U.S. military policy. And the division is stuck with that equipment. Canada is now engaged in a thorough overhaul of its military establishment, which requires re-equipment for a new primary mission. A new aircraft for the air division is not even included in the "White Paper on Defence" of March 1964, in the listing of priorities for materiel procurement.⁷ No funds would be available for that purpose anyway, not in the foreseeable future. Canada thus finds itself in this instance in a paradoxical situation. It is among the strongest supporters of the NATO idea, including the maintenance of an efficient, powerful, integrated military organization for the defence of Europe. Yet, because of a mistake made in 1958, a mistake

quite excusable because it resulted from the country's traditional defence policy, Canada's potentially most important contribution to NATO is ineffective—and yet bound to remain as is, even though now recognized as ineffective.

Canada makes two other air contributions to NATO, one direct and one indirect. Among the earmarked maritime forces, which will be at SACLANT's disposal in case of emergency, are the bulk of the country's maritime aircraft. The total inventory at present is 32 Canadair Argus, 21 Lockheed Neptune, and 71 Grumman Tracker (built by De Havilland of Canada) fixed-wing aircraft, and 25 Sikorsky Sea King helicopters. Of these, all except one squadron of Neptunes and a few Tracker aircraft are on the Atlantic. Canada is already in peacetime responsible for control of the northern sector of the western Atlantic, and the Canadian area commander (CANLANT) comes directly under the Commander in Chief, Western Atlantic (CINCPACWEST), in Norfolk, Virginia. It is a working organization, and the transition to SACLANT command, if it came to that, can be expected to be smooth. Furthermore, the total Canadian contribution is substantial: it includes, apart from the already-listed ocean patrol and antisubmarine warfare aircraft, a naval force of one aircraft carrier and 28 escorts of various descriptions.

As doubts began to arise in Canada concerning the usefulness in its present form of the main Canadian military contribution to NATO, that of ground and air forces for the Central European sector, interest increased in the alliance's mobile land force [AMF(L)]. Its commander is now a Canadian, Major-General Gilles Turcot, and the Canadian contribution is one reinforced battalion group of about 1200, all ranks. Canada has already expressed its readiness to furnish a second battalion group, if required. The whole force is air-transportable, the goal being deployment on one of NATO's flanks—the northern, in the case of the Canadian unit—within seven days of an alert. In exercise "Winter Express" in February 1966 the goal was surpassed, deployment being accomplished in 5 days 7 hours. This was done by means of 61 flights of 7 Canadair

Yukons and 13 Lockheed Hercules of Air Transport Command, with only a comparatively small part of the equipment (mainly the helicopters of the battalion group) going by sea. Current plans call for a substantial strengthening of Air Transport Command. The Canadian capability to support NATO by swift movements of troops and materiel from home bases in Canada to given danger spots will thus be enhanced. This is considered preferable to the stationing of mobile reserves in Europe.⁸

Having taken a rational look at its own military contribution to NATO, the Canadian government is now very cognizant of the shortcomings in the military posture of the alliance. On one hand, Canada does not wish to rock the NATO boat right now when it has just got such a severe buffeting from France. On the other hand, Ottawa wants to see reform come quickly, so as not to prolong the condition which has given France cause for leaving the military organization. Defence Minister Paul Hellyer put it this way:

What is needed is a look at the real strategic situation in the world today. A look at the change in the balance of power since the treaty was signed. A look at the restored and increasingly powerful Europe, and the part it should play in relation to its North American partners. A look at the military organization. A look at the plethora of headquarters and the allegation that . . . the organization is becoming topheavy with headquarters and their bureaucratic machinery. We also need to take a look at the Council and its real ability to cope with the decision-making requirements.⁹

It is the kind of searching examination leading to the determination of a strategy, of force requirements and member contributions, agreed to by *all* treaty partners, which should have been completed and acted upon before France defected. Instead it has merely been promised again and again since the Ottawa ministerial meeting of NATO in May 1963.

In the meantime, Canada will in all likelihood stand pat with its militarily dubious contribution to the forces assigned to SACEUR in the Central Europe sector, while possibly increasing its much more useful contribution to

"Winter Express"

In February 1966 NATO exercise "Winter Express" was held in Norway to test deployment procedures for British, Canadian, Italian, Norwegian, and U.S. forces. Hercules and Chinook assisted in rapid deployment of the Canadian unit and its arctic equipment.





the AMF(L). Canada can make this concession, in order not to make things more difficult in the present disconcerting situation in NATO. The moment of truth will come, however, as soon as the problem of the role and the equipment of No. 1 Air Division must be tackled anew. This may happen soon if the re-examination of the military posture of NATO is advanced energetically, and at the latest when the CF-104s of the division come to the end of their life span (their usefulness having ended before they ever entered squadron service). Even though Canada may then find itself in an embarrassing position, such as it would not have encountered in the balmy days when it just went along in the military field with whatever others did, one can only hope that the opportunity for making new decisions will not be long in coming.

Canada in NORAD

The United States and Canada have cooperated in one form or another in North American air defence from the moment a need for it began to be felt. The first concrete steps were taken by a joint body, the Military Cooperation Committee. On its instruction, the USAF and RCAF air defence commands drew up the first common emergency air defence plan in 1950. Four years later a combined planning group was established. In the meantime Canada had gone into the active air defence business, with the activation, from the summer of 1953 onwards, of all-weather interceptor squadrons equipped with the Avro CF-100. Construction proceeded apace on three radar lines, the U.S.-built Distant Early Warning (DEW) Line, the Canadian automatic unmanned Mid-Canada Line, and the jointly erected Pinetree Line.

Up to 1957, cooperation was close even though informal, and things certainly worked out well in practice. Still, the USAF and the RCAF were equally anxious to see this cooperation formalized by the establishment of a single organization. Agreement between the two governments was reached in August 1957, NORAD Headquarters was activated on 12th September 1957, and a 10-year accord formally

signed on 12th May 1958. It has been suggested that the Canadian government was less than eager to enter into the NORAD agreement and that the RCAF was able to "sell" it only because a new Progressive-Conservative administration had at the time just taken over from the previous Liberal one and was not in the picture yet. There is no substantial evidence for this contention. The establishment of NORAD coincided with the flights of Sputnik I and the first Soviet ICBM. It is unlikely that any Canadian government would have closed its eyes to the advantages of unified command in what was obviously a single defence area. In any event, there will be no difficulties from the Canadian side when the agreement comes up for renewal in 1968.

The Canadian Air Defence Command operates as a component command of NORAD. It is now colocated with Headquarters Northern NORAD Region, in North Bay, Ontario. Many of the staff positions in the two organizations are "double-hatted," including that of the commander. There are now five Canadian active air defence units: two of them, McDonnell CF-101 Voodoo, manned; two Boeing Bomarc missile, unmanned, interceptor squadrons in 41st NORAD Division of Northern Region; and one Voodoo squadron in 25th NORAD Division of Western Region. The total inventory is 62 Voodoos and 56 Bomarcs. Canada mans all the heavy radars of the Pinetree Line apart from those in the Newfoundland/Labrador area (where it mans one) and provides the commanders and operations room staffs of the otherwise civilian-manned DEW Line stations located in Canada. It also operates one SAGE direction center and two Backup Interceptor Control (BUIC) combat centers, as well as a satellite-tracking facility with Baker-Nunn camera at Cold Lake, Alberta. In the 1966-67 Estimates, \$125,232,000 is allocated to Air Defence Command or close to nine percent of the military expenditures proper. In personnel, the Command has about 10 percent of the Regular Force establishment of about 110,000. A small, indirect contribution to North American air defence is made by the Canadian Army, which mans the Federal Warning Centers and works generally in the

field of national survival under the direction of the Emergency Measures Organization (EMO).

Air Defence Command has shrunk in size in the last years as the bomber threat, which it alone is designed to counter, declined. It now appears to have arrived at the irreducible minimum in both manpower and equipment if it is to carry out its task of surveillance of Canadian airspace to ensure freedom from intruders and if it is to make any kind of useful contribution to the warding off of even a residual threat from enemy manned aircraft. Yet no follow-up to the flying equipment of the Command has so far been seriously contemplated. New air defence weapon systems do not figure in the list of procurement priorities in the "White Paper on Defence" of March 1964. It seems that the Canadian government is content to let things ride for the present and await further developments in the aerospace defence field.

To come back to the Canadian attitude toward NORAD, although there were no real objections to the establishment of a unified command and there will be none to the renewal of the agreement, no great support has been given it either. In the one instance when it was tested in an actual emergency, the Canadian response was unsatisfactory. This was in the Cuban crisis. When on 22nd October 1962, the day of President Kennedy's crucial address to the nation, NORAD raised its alert state (reportedly to DefCon Three), the Canadian government, although forewarned by a special Presidential emissary, hesitated to allow the RCAF Air Defence Command to follow suit. For 48 hours formal coordination was lost, even though it was maintained on the working level to the limit of the leeway given by the absence of specific orders from Ottawa. When the Canadian government at last came along, the worst of the crisis was over—and so probably would the nuclear exchange have been, had it come to one.

It should be said right away that the Government's indecision in the Cuban affair did not enhance its standing in the eyes of the nation. On the contrary, the fumble was brought up again in the defence crisis that led to the fall of the Government a few months

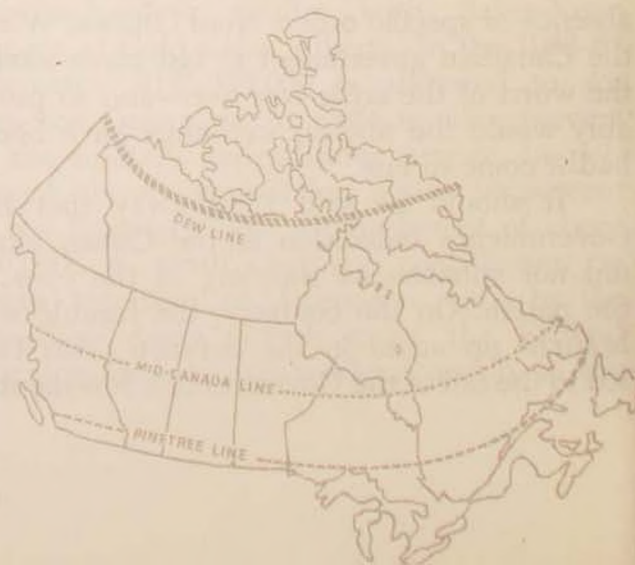
later. Still, the incident pointed up a possible weakness in the NORAD setup: it is perhaps too ideally equitable and precise to be practical. Thus, the arrangement by which the Commander in Chief NORAD is equally responsible to the President of the United States through the U.S. Joint Chiefs of Staff and to the Canadian government through the Canadian Chief of Defence Staff is not really workable in all circumstances. He is after all an American officer, commanding a force that is more than 90 percent American and unlikely to be called into action other than as a consequence of a U.S. policy or an inimical policy aimed at the United States. In brief, in NORAD, Canadian participation is indispensable, but almost entirely for reasons of geography. This being so, it would surely be too much to ask of an American commander in chief to act in all circumstances in accordance with Ottawa as much as Washington instructions, or, as he might have done in the Cuban crisis, to react dutifully to the obvious reluctance of Ottawa to give any instructions. To draw a parallel with SACEUR's position would be quite wrong, for the latter is responsible not to governments directly but to a separate entity, the alliance represented by the North Atlantic Council, of which the United States is a member. In a way, SACEUR is an international officer, comparable to a commander of a U.N. peace force. The American commander in chief of NORAD and his Canadian deputy are not; they are national officers with, supposedly, a dual allegiance. The arrangement stems from the assumption that all problems which might face the organization must of necessity be common to the United States and Canada and could not be dealt with otherwise than in common. The Cuban crisis showed that this is not necessarily so; Washington and Ottawa might disagree on what constitutes a threat to North America. If this should happen again, the staffing of so many NORAD positions with Canadian officers—many more than the size of the Canadian contribution warrants—could prove a serious handicap. (The reverse is unlikely.) In such a situation, the old informal cooperation of pre-NORAD days could well be more advantageous.



Distant Early Warning Line

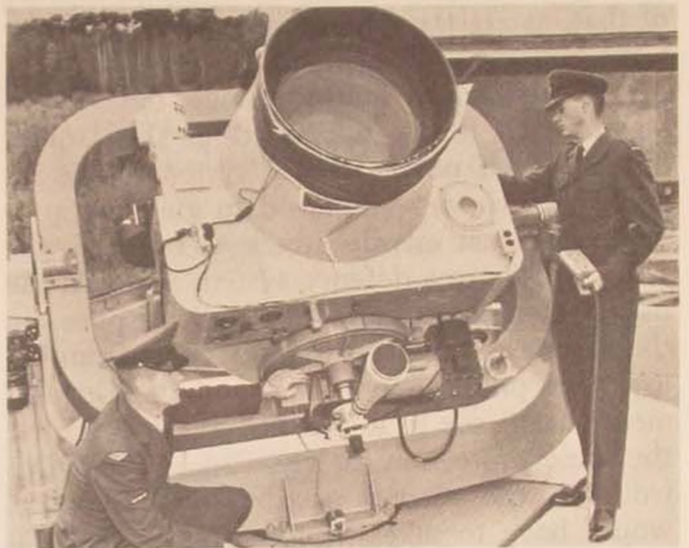
Canada in NORAD

Canada's Air Defence Command is an integral part of North American Air Defense Command (NORAD), and the five active Canadian units and other components participate in a wide variety of manned and unmanned air defence activities.





McDonnell CF-101 Voodoo



*Baker-Nunn camera,
Cold Lake, Alberta*



Bomarc

*Deep under ground at NORAD's Colorado
combat operations center USAF and Canadian
officers watch for indications of aerospace attack.*

Difficulties with the unified command of North American air defence may arise also if and when the United States decides to put in place an antimissile defence system. In this matter, the Canadian government is taking at present a "wait and see" attitude. It can not do otherwise. Money for defence is scarce; and what there is, is committed for years ahead—perhaps not formally, but just as surely, practically. The public is largely indifferent. It certainly could not be stirred up, under present circumstances, to any effort toward ensuring its safety from missile attack, the possibility of which has not even begun to enter the public mind. The failure of earlier attempts to promote a shelter program is proof of that, as are the conditions under which the Canadian EMO has to operate.

The situation could change radically if one of two things happened in the United States: (1) if point defence systems were installed which were believed to give real protection against missile attack to urban areas; (2) if a U.S. area defence system required the use of Canadian real estate and airspace. In the first case, the pressure may come from below. The public may demand of the Government that it see to it that Canadian cities get the same protection as, say, Chicago and Detroit. In the second case, the Government would have to take the initiative. The situation would be the same as it was at the end of the Forties when a bomber threat began to loom. Then, Canada realized that the United States had to have use of Canadian territory and airspace to counter that threat. The choice was between surrendering sovereignty and letting the United States do the job over Canadian heads, or Canada's doing it in cooperation with the United States. The latter course was naturally chosen. There is no doubt that it would be chosen again, despite the additional expenditure it would entail (and which the Government would much prefer to avoid at this point) if the United States decided on a North American antimissile defence system.

The most awkward situation, from the point of view of the workings of NORAD, would be created by an American decision to install a type of antimissile defence in which the Ca-

nadian public would have no interest and a participation in which the Government would find impossible, politically, to "sell" to the people. This could happen, for instance, in the event of the limited, West Coast-only, antimissile defence system against a future Chinese threat, which is reportedly being considered. If it came to that and it was made part of general North American defence, the unified setup in NORAD and Western NORAD Region headquarters would be a source of embarrassment, on both the political and the working levels.

In sum, then, while there is no significant opposition in Canada against the NORAD setup and everybody who gives any thought to it agrees that it represents by far the best solution from the viewpoint of technical and military efficiency, at least some observers wonder whether a more informal relationship would not actually work better in practice. Here, again, Canada is in a somewhat equivocal position. It reaps many advantages from its membership in NORAD. On the other hand, complete integration in that organization always carries with it the danger that the bigger, richer, and more heavily engaged partner will drag the smaller one farther than it would want or can really afford to go. NORAD is just now in a comparatively quiescent stage of development, between a declining bomber threat (because largely warded off) and a missile threat which cannot yet be actively combated. In such a period, Canada naturally does not find it difficult to go along all the way. The real problems will arise when the era of marking time will be over—undoubtedly in the fairly near future.

unification

Although it is not really germane to the subject matter of this article, brief mention must be made of service unification in Canada. By the time this account appears in print, the bill abolishing the Royal Canadian Navy, the Canadian Army, and the Royal Canadian Air Force and replacing them within a single service, the Canadian Armed Forces, will be before parliament. Indeed—but this is less likely

—it may already have been passed. Service unification is a revolutionary development which, again, has sprung from the already-discussed fundamental change in Canadian outlook on defence policy. As far as NATO and NORAD are concerned, service unification will almost certainly make no difference in the Canadian standpoint toward or Canadian par-

ticipation in these two organizations. Canada will still want to cooperate, certainly to the full extent of its contractual obligations, and, beyond that, to the limit of what in its newly acquired intellectual freedom in defence matters it considers it can usefully do.

Toronto, Ontario

Notes

1. Defence Minister Paul Hellyer expressed this as follows in testimony before the House of Commons Standing Committee on National Defence, on 3rd June 1966:

"First of all, on the question of philosophy and strategic appraisal, we are now doing this ourselves. . . . we are turning in the direction of doing more independent thinking. I think this is right, because if you depend too heavily on the thinking of others, you might easily find yourself following policies that you did not really agree with if you stop to think them through. Therefore, we are giving more consideration to the larger matters than, I think, has ever been the case in this country before."

2. Total Defence Estimates amount to \$1,572,690,000. Of this, \$1,420,315,000 goes to true military, \$152,375,000 to other purposes (e.g., pensions, mutual aid, etc.).

3. Paragraphs 20 and 21 of the communiqué of the meeting.

4. During the domestic controversy over nuclear weapons which came up three years later, it was contended that the government of Prime Minister John Diefenbaker did not realize that the strike-reconnaissance role implied carrying atomic bombs. It is difficult to believe this, even of a government which on the whole was more unmilitary, if not antimilitary, than most.

5. *New York Times*, 7th June 1961.

6. Statement of Prime Minister Lester B. Pearson, 20th July 1966.

7. "White Paper on Defence," March 1964 (Queen's Printer, Ottawa), p. 24, ("Priorities").

8. "White Paper," p. 21, ("NATO Europe").

9. Address to the Canadian Club of Ottawa, 1st March 1966.





**KENNEDY
AND DEFENSE**
the formative years

DR. JEAN EDWARD SMITH



JOHAN F. KENNEDY's concern with military affairs is well known. His early exposure to wartime diplomacy in England, his Harvard thesis on England's unpreparedness (later published as *Why England Slept*), and his European tour on the outbreak of World War II are matters of common knowledge. His Navy career in the South Pacific is familiar to every schoolboy. His subsequent labors as a foreign correspondent, his interest in history, his fondness for martial trinkets, even the decor of his personal office attest to a continuing concern in things military. Like Franklin Roosevelt and Winston Churchill, John Kennedy was at home with the military.¹ Problems of national security attracted and excited him. Much of his campaign for the Presidency focused on America's position in world affairs. When he became President, it is not surprising that defense and diplomacy occupied the major portion of his time.²

But to say that one is interested in national security says little about the nature of that interest. General Curtis LeMay and Bertrand Russell are also interested in national security—and there the similarity ends. President Kennedy's interest differed from both theirs. As a Harvard undergraduate he had seen the price England paid for its unpreparedness. As a newsman covering the San Francisco and Potsdam conferences he recognized the difficulties in reaching a great-power accord. And as a veteran of the Pacific conflict, he experienced the hardship of war. These lessons were seminal for John Kennedy: preparedness, international cooperation, and the avoidance of war. Each figured prominently in his subsequent career.

Kennedy's discussion of England's unpre-

paredness is revealing. It was not a benighted Chamberlain to blame; it was the entire fabric of English society. As a leader, Chamberlain had failed to lead; but equally serious, the public had been unready to follow.³ The real question, according to Kennedy, was not faulty diplomacy but faulty armaments. While one group in England thought that the way to deal with Hitler was by showing strength, the other felt that the way to peace was by removing the causes of war. And rearmament, he insisted, was integral to both policies.

Because of her unpreparedness, Kennedy was reluctant to criticize England's appeasement policy. For while that policy was partly based on the belief that a basis for peace could be built, it was "also formulated on the realization that Britain's defense program, due to its tardiness in getting started, would not come to harvest until 1939." That Kennedy was influenced by the views of his father, then U.S. Ambassador to the Court of St. James, appears obvious. But the conclusion he drew differed markedly.⁴ For Joseph P. Kennedy, the lesson was peace at any price. For his son, preparedness at any cost.⁵

As for Munich, it was simply the outgrowth of a policy of too little and too late.

In the debate that followed the agreement, especially in America, to be pro-Munich was to be pro-Hitler and pro-Fascism. To be anti-Munich was to be pro-liberal and pro-democracy. Upon few other topics did the ordinary man, as well as the expert, have such intense opinions. Americans simplified the issue, compared it to a game of poker, and decided that Chamberlain had played his cards badly and been outbluffed. A nation of poker players, therefore, had little respect for the English leader or for his policy. But they did

not examine the cards he held. This would have shown that the British Prime Minister had little on which to gamble the existence of a great empire.⁶

When he returned from the war in February 1945, John Kennedy turned his consideration to the question of peace. Stung by a strong preparedness plea that Harry Hopkins had written in the *American Magazine*,⁷ Kennedy composed a rejoinder: "Let's Try an Experiment in Peace." Still unpublished, the article suggested an arms control agreement among the Big Three—Britain, Russia, and the United States. What Kennedy said was scarcely original, but in terms of his own development the essay had profound significance. For the author of *Why England Slept* now recognized another dimension to peace: preparedness itself was not enough.

Indeed, it was the preparedness argument which most distressed Kennedy. To suggest that America should be the strongest nation on earth, he said, was "a plan for superarmament."

At the end of this war we shall have only three countries—the USSR, Britain, and the United States—in a position to wage total war. . . . There will, of course, have to be a strong growth of mutual trust between these countries before any comprehensive plan can be worked out. There are many people in this country, for example, who feel that Russia's unilateral settlement of the problems of Eastern Europe precludes any workable postwar agreements being worked out with the Soviet. . . . These people have much evidence on which to base their suspicions, and there will have to be a radical change in the Soviet attitude before the people in this country would agree to work out arms limitations with the Russians.

Likewise, we will have to demonstrate to the Soviet our willingness to try to work out European problems on equitable lines before the Russians will put any real confidence in our protestations of friendship. The Russian memory is long, and many of the leaders of the present government remember the years after the last war when they fought in the Red Armies against the invading troops of many nations, including Britain and the United States.

If armaments could not be controlled,

said Kennedy, the prospects for peace were dubious. "Science will always overtake caution with new terrors against which defense cannot be anticipated. . . . Into the orthodox picture of classical warfare, comes the 'V' bomb, which raises a spectre of destruction almost beyond the human mind to grasp. . . . It is not an exaggeration to expect these missiles will be developed to a point where theoretically any spot on the globe can send to any community in the world, with pinpoint accuracy, a silent but frightful message of death and destruction. . . . Detection of their source may be difficult. One does not have to be a Jules Verne to visualize the death of the human race, a victim of science and moral degeneracy."

Two months later John Kennedy was in San Francisco covering the organizational meeting of the United Nations. The task was to draft a charter for the new organization, and Kennedy was to see at first hand the ephemeral nature of Big Three cooperation. Writing "from a GI viewpoint" for the Hearst chain of newspapers, Kennedy blended postwar idealism with a strong sense of reality. On the whole he was sympathetic to the new effort in international cooperation, and his initial article decried the extensive buildup which the conference had received. People were expecting too much, he wrote.

The stormy sessions of the first week confirmed his opinion that

we have a long way to go before Russia will entrust her safety to any organization other than the Red Army. The Russians may have forgiven, but they haven't forgotten, and they remember very clearly those years before the war when Russia was only looking in the kitchen window. . . . There is a heritage of 25 years of distrust between Russia and the rest of the world that cannot be overcome completely for a good many years.

Kennedy left San Francisco partially disheartened. But to his earlier injunction on preparedness he had added valuable insights. First, preparedness in itself was sterile and disruptive. Absolute security for one nation, or one group of nations, meant absolute insecurity for the remainder. The most likely result

was an unbridled arms race. The second conclusion that Kennedy drew was that Big Three cooperation would not come easy. Indeed, the road was likely to get worse before it got better. But the underlying necessity was clear: without a modicum of great-power agreement—of agreement between the U.S. and the U.S.S.R.—there could be no lasting peace.

To a PT-boat friend who inquired about the conference, Kennedy (as quoted by Schlesinger) was eminently realistic:

It would be very easy to write a letter to you that was angry. . . . When I think how much this war has cost us, of the deaths of Cy and Peter and Orv and Gil and Demi and Joe and Billy and all those thousands and millions who have died with them—when I think of all those gallant acts that I have seen or anyone has seen who has been to the war—it would be a very easy thing to feel disappointed and somewhat betrayed. . . . You have seen battlefields

where sacrifice was the order of the day and to compare that sacrifice to the timidity and selfishness of the nations gathered at San Francisco must inevitably be disillusioning.

Nevertheless, said Kennedy, a decision could not be forced from the top. The World Federalists had an answer, but things were not that easy. The idea of sovereignty was still too strong. "We must face the truth that the people have not been horrified by war to a sufficient extent to force them to go to any extent rather than have another war. . . . War will exist until that distant day when the conscientious objector enjoys the same reputation and prestige that the warrior does today." What the conference had done, he concluded, was not to make war impossible—which was clearly beyond its powers—but to make it more difficult. "A truly just solution," he confided to his notebook, "will leave every nation somewhat disappointed. There is no cure all."



JOHAN KENNEDY arrived in Washington in January 1947, a freshman congressman of twenty-nine. Friends and critics generally agree that he was little prepared.⁸ But this is much truer of his legislative perspective than it is of his conception of foreign affairs and national security. To measure Kennedy's stature as a legislator, one must compare him to his fellow freshmen of 1946. The roster is impressive, including Jacob Javits and Kenneth Keating of New York, Richard Nixon of

California, George Smathers of Florida, Carl Albert of Oklahoma, and 97 others. Yet who of them had seen as much of the world as Kennedy, had committed so many of his thoughts to paper, or had studied the world situation at such length?

"Politics," as Arthur Schlesinger has suggested, "perhaps attracted him less as a means of saving this world than of keeping it from getting worse."

Kennedy's committee assignments reflect-

ed his junior status: Education and Labor (along with Richard Nixon), and District of Columbia. Making a virtue of necessity, Kennedy concentrated on domestic affairs—and usually on the parochial domestic affairs which are a freshman congressman's bread and butter. His subsequent attempts to secure a seat on the Foreign Affairs Committee⁹ were pigeonholed by the Democratic leadership, in strict conformity with the custom of the House. To get along, one must go along, Sam Rayburn said, and Kennedy was much too independent.

Kennedy's House record was basically internationalist, although as his freshman term wore on, advocacy of international peace and great-power cooperation yielded increasingly to a revived concern for security. There was ample reason. It seemed that Communism was on the offensive everywhere. The Balkans became a Soviet appendage, Czechoslovakia fell to a Communist coup, and in Berlin the blockade dramatized the apparently implacable nature of Russian demands. In this context, the message seemed clear: only America could stem the tide; to do so she must be strong.

Kennedy supported aid to Greece and Turkey, the Marshall Plan, and the dispatch of U.S. ground forces to Europe. The best summary of his views during this period occurs in a March 1947 address to the Carolina Political Union at the University of North Carolina. The subject was President Truman's proposal for aid to Greece and Turkey, and JFK endorsed it warmly:

We have only to look at the map to see what might happen if Greece and Turkey fell into the Communist orbit. The road to the Middle East would be flung open. The traditional goal of the Russian foreign policy, an opening to the Mediterranean, with all of its strategic implications, would be gained. If we give way and Greece and Turkey succumb it would have tremendous strategic and ideological repercussions throughout the world. . . . The barriers would be down and the Red tide would flow across the face of Europe and through Asia with new power and vigor.

War with Russia remained a distinct possibility, he said. Such a war might arise in two

ways. The greatest danger would arise from deliberate decision of the Red leaders 25 to 35 years in the future.

At that time, Russia will have a greater population than all the rest of Europe. . . . She will have the atomic bomb, the planes, the ports, and the ships to wage aggressive war outside her borders. Such a conflict would truly mean the end of the world and all our diplomacy and prayers must be exerted to avoid it.

The second danger stemmed from miscalculation. Russia may "stumble" into a war which she may not want.

The Russian information and intelligence services are, I believe, among the poorest in the world despite all the glamorous nonsense which seems to be written about them. The reports which these services supply to the Kremlin cannot be checked against any independent sources of information. . . . The Kremlin's view of world affairs, therefore, is bound to be limited.

Kennedy's faith in the United Nations continued. Many people, he said, feel that the U.N. has been slighted.

I think the feeling arises from some confusion as to what the United Nations can do. It is not equipped to deal with every problem in international affairs nor is there anything in the concept of the United Nations which precludes one nation from asking another for assistance as Greece has asked the United States.

Moreover, we must remember that the whole concept of the United Nations is that of the evolution of law backed up by force utilized under the guidance and restraint of the Security Council.

The United Nations is the great hope for the future. . . . It would, however, mean an early collapse of the United Nations organization if we were to place on its infant shoulders a burden which it cannot yet bear and with which it was, in fact, never intended it should deal.

The central theme of American foreign policy, said Kennedy, was "the prevention of Russian domination of Europe and Asia. This is the foreign policy that I support most vigorously. Upon it depends our security, and I believe the best hope of peace."

As the Eightieth Congress continued, Kennedy drifted further from the Administration position. Doubtless, some of this drift reflected a change of attitude on his part. Some also reflected an adjustment to his new surroundings, for the Eightieth Congress was overwhelmingly Republican and anti-Truman. Much more, however, seems due to Kennedy's inability to "find himself" as a freshman congressman, to his feeling of insignificance, and to his marginal involvement in the affairs of the House. It was difficult for someone not deeply committed to the Democratic Party organization to support the interim Administration of Harry Truman in 1948, particularly when the world seemed to be coming apart at the seams.¹⁰

In his votes, JFK supported European recovery, foreign aid, and the peacetime draft.¹¹ But offstage, the rumblings of his dissatisfaction grew louder.¹² For alongside Kennedy's revived interest in security traveled a new companion: a vigorous anti-Communism with strong nationalist (some might say isolationist) overtones. Doubtless, much of this reflects the tenor of the times. When the 81st Congress convened (Kennedy had been unopposed in both the primary and general elections), the situation in China approached catastrophe. The armies of Mao Tse-tung swept southward, and in late January Chiang Kai-shek gave up the fight and fled to Formosa. With greater feeling than logic, Kennedy found the Truman Administration guilty of Chiang Kai-shek's collapse. "The responsibility for this failure of our foreign policy in the Far East," said Kennedy, "rests squarely with the White House and the Department of State."¹³

With the attack on Korea, Kennedy's interest in national security intensified.¹⁴ He criticized the tardiness of U.S. rearmament, condemned Defense Secretary Louis Johnson's retrenchment policies, and supported a 70-group Air Force rather than the 55 groups requested by the Administration. Much of this was the conventional response in a Congress caught off guard: a Congress that had applauded the Truman economy moves when they were made, yet drew back in anger when danger threatened.

Kennedy also advocated greater American effort in Europe, including the use of U.S. troops, if necessary. "If we are going to successfully meet our obligations under the Atlantic Pact," he told the House, "if we still feel it is essential to our security that Western Europe remain free—then we must mobilize our manpower to a far greater degree than we have as yet planned."

We must be able to put sufficient American divisions in the field in that area to demonstrate to the Europeans that we believe Western Europe can be held.

The plain truth, and we all must know it, is that the forces that we now have and that we are planning to raise do not begin to meet the commitments that have been made.¹⁵

Kennedy's support for troops in Europe placed him at odds with his father. Less than four months after his son's remarks in the House, Joseph P. Kennedy vigorously condemned U.S. foreign policy in a speech at the University of Virginia. The foreign policy of the Truman Administration, the elder Kennedy said, "is politically and morally a bankrupt policy." The U.S. should pull out in Korea "and any other place in Asia where we cannot hold our defenses." But most important, he advocated disengagement in Europe. "What have we gained by staying in Berlin?" he asked. "Everyone knows we can be pushed out the moment the Russians choose to push us out. Isn't it better to get out now?" He criticized the Truman Doctrine of aid to Greece and Turkey, the British loan, and reliance on the United Nations. Instead, he urged the fortification of Canada and Latin America.

Doubtless challenged by his father's views, Representative Kennedy spent six weeks in Europe after Congress adjourned. When he returned in mid-February, he delivered a radio report to his Massachusetts constituents. The situation, he said, was critical, and the next few months would be decisive. Nevertheless, Kennedy hesitated to give the Administration complete support. What was important was to work out a proper relationship with Western Europe. "That . . . [relationship] cannot be the product of one

man's thought or that of a small group. It is this nation acting through the *Congress* and the Executive that must fashion that program and coordinate it with our own defense." Apparently, Kennedy's trip confirmed his fears of the previous summer: without U.S. strength physically deployed on the Continent, Western Europe might not pull through.

Already the question of sending troops to Europe had precipitated a major Senate debate. The debate focused on a resolution introduced by Senator Kenneth Wherry (R., Neb.) that would have barred the President from sending troops abroad in peacetime without Congressional approval. Hearings on the resolution were held jointly by the Foreign Relations Committee and the Armed Services Committee. Because of his recent European visit, Representative Kennedy was invited to testify.

In his statement to the committee, Kennedy indicated the need for additional U.S. divisions in Western Europe. Europe was important to the United States because of its resources, its manpower, and its strategic location. But to the dismay of Administration supporters (and the delight of Senator Wherry), Kennedy qualified his endorsement by suggesting a strict ratio of U.S. to European forces. America should not shoulder the burden alone; for each division the U.S. committed, our allies should commit six. And because the Administration probably would not enforce such a requirement, the Congress should supervise its implementation.

Senator Wayne Morse (R., Ore.) was appalled. We were involved in Europe, he said, "because we recognize the loss of Europe to Russia would be a threat to America's security. And if that is why we are going in there, then why should we limit ourselves in advance . . . ?"

"I am not advocating a ratio system in order to limit our contribution to Western Europe," Kennedy replied. "It is not a back-handed way of trying to pull out. . . . I am in favor of the ratio system in order to make the Europeans do more. . . ."

SENATOR MORSE: Do you think that there is any danger . . . in respect to European public

opinion in adopting a ratio system that would be interpreted . . . as an indication . . . that we questioned their good faith unless we make them sign on the dotted line . . . ? Don't you think that would have a rather undesirable effect both on their morale and on our relations with them?

MR. KENNEDY: Well, they are not going to be happy about it, obviously, but after all, we are sending six divisions; we are going to equip these countries and I think we have a right to insist that they do a proportionate share.

But, Morse persisted, would not Congressional supervision intrude on the constitutional right of the Executive as Commander in Chief? Kennedy equivocated: it was a constitutional issue, he said, which Morse could probably answer. "I wish I could," the Senator from Oregon charitably replied.¹⁶

Senator Tom Connally, chairman of the Foreign Relations Committee, was also dubious.

CHAIRMAN CONNALLY: I am sorry, Mr. Kennedy, but I was not here at the beginning of your testimony. I think you testified awhile ago that you thought Western Europe was our first line of defense. Did you say that?

MR. KENNEDY: Yes, sir.

CHAIRMAN CONNALLY: If that is true, are you not in favor of strengthening Western Europe all that we can?

MR. KENNEDY: I am in favor of sending these troops that we are talking about to Western Europe.

CHAIRMAN CONNALLY: These four divisions?

MR. KENNEDY: Yes, sir.

CHAIRMAN CONNALLY: You said something about the rest of the nations might not go along, might not provide what is expected of them. As I recall the testimony of General Eisenhower, he said he was going to constantly insist on these other governments doing their part, and if they don't we can probably withdraw.

MR. KENNEDY: General Eisenhower, in the speech made before Congress, said he would like to have brought back comparable statistics so he could give us some idea of the effort these European countries were making. But he said

he could not do so. I feel that these statistics would have told a revealing story about the degree of effort that these European countries are making, and in not bringing them back, General Eisenhower was not completely frank with Congress. . . .

CHAIRMAN CONNALLY: Do you think that all of the troops over there, and what they do, should be controlled by Congress?

MR. KENNEDY: I think the ratio should be controlled by Congress, that this plan of setting up a ratio of 6 to 1 will have to be put through by the Congress. I think that otherwise it will not be done.

CHAIRMAN CONNALLY: Are you a lawyer?

MR. KENNEDY: No, I am not.

CHAIRMAN CONNALLY: You are aware . . . of the constitutional provisions that the President is Commander-in-Chief of the Army and Navy and so on, are you not?

MR. KENNEDY: Yes.

CHAIRMAN CONNALLY: Do you want the control of the Army turned over to Congress?

MR. KENNEDY: I would want the Congress to set the policy of six European divisions for every one we sent there. I would put no limit on the number of American divisions we send so long as this ratio system was in effect. I am not trying to limit the American effort. I am trying to bring the European effort up to match it, considering that we have responsibilities elsewhere and that most of their equipment is going to come from the United States, I do not think that is unreasonable.

For the remainder of his service in the House, Kennedy held to the position that Europe must do its share. But at the same time, his support for NATO and the mutual assistance program was unswerving. His concern was for haste—to do it now, before it was too late. And because of his declining confidence in the Truman Administration, he felt that Congress could accelerate the program.

From the author of *Why England Slept*, Kennedy's position on European rearmament seems clear. His concern with security was of long standing, as was his awareness of public indifference. Unlike his father, he interpreted U.S. security interests broadly and favored

increasing our European commitment. His concern—and it was to prove a continuing one—was that our efforts be reciprocated.

Two further aspects of Mr. Kennedy's Congressional career deserve comment: his growing hostility to things Communist, and his increasing impatience with colonialism. Kennedy's hostility to Communism—the handmaiden of his concern for security—led him at times to embrace virtually any ally. Support for Chiang was clear from the beginning, as perhaps was Kennedy's acceptance of the belief that the U.S. contributed to his defeat.¹⁷ Equally determined was his support for Franco. He pleaded vigorously for Spain's inclusion in the Mutual Security Act of 1950; in fact he offered an amendment awarding Spain \$75 million in military assistance.¹⁸ On his return from Europe in early 1951, JFK repeated his plea for Spain. Acknowledging that he had found “considerable distrust and distaste” for Franco in Britain and France, he nevertheless insisted that Spain, with “an army willing to fight and as a base of operations, as a source of power, and because of its strategic position straddling the Mediterranean can no longer be ignored.”

Shortly afterwards Kennedy introduced a bill to curb commercial traffic with Communist China. Not only would U.S. trade be affected but also that of any other nation receiving financial aid from the United States. The bill was aimed primarily at Great Britain, and under its terms all financial assistance would be terminated if the trade continued. Hong Kong too was included in the ban. “I hope,” Kennedy remarked, “that this House will take speedy and favorable action on this bill. I believe its passage would prove to the world, that while Americans may have different ideas as to U.S. policy in the Far East, all of us are united in our determination to stop the ‘trade in blood’ that has been going on.”

By late summer, Kennedy's concern for U.S. security veered sharply toward the narrow nationalism so characteristic of certain segments of the Republican Party. For the first (and only) time in his Congressional career he voted to cut economic assistance funds

for Europe. "The Europeans," he said, "have been unwilling to make sufficient sacrifices to build up their own strength. . . . I think it is foolish to cut the military assistance, but I do not think there is any doubt but what the economic assistance can be cut."¹⁹ His ax sharpened, Kennedy offered amendments cutting economic aid to Africa and the Near East from \$175 to \$140 million²⁰ and cutting military assistance to Latin America from \$40 million to \$20 million.²¹

Following an inspection trip to Asia that autumn, Kennedy excoriated the whole concept of foreign aid as "utopian." Said Kennedy to the Boston Chamber of Commerce:

We cannot reform the world. . . . Uncle Sugar is as dangerous a role for us to play as Uncle Shylock. . . . The thirty billions of dollars we are spending in Europe have yet to prove that they have made for self-defense in that area; but whatever is true there, to repeat such a procedure in Asia or the South Pacific is impossible.

We cannot abolish the poverty and want that for centuries have characterized this area. There is just not enough money in the world to relieve the poverty of all the millions of this world who may be threatened by Communism. We should not attempt to buy their freedom from this threat. All we can do is help them achieve that freedom if they really wish to do so.

Our resources are not limitless. We must make no broad unlimited grant to any government. Aid and help in the matter of techniques is a different thing. But as some of our recent experiences demonstrate, mere grants of money are debilitating and wasteful. Moreover, we ought to know that more expenditures bring no lasting results—people who are with us merely because of the things they get from us are weak reeds to lean upon.

The vision of a bottle of milk for every Hottentot is a nice one, but it not only is beyond our grasp, but is beyond our reach. Because of naive belief that the export of dollars would solve the world's ills, the United States has failed to realize the possibilities that lie in encouraging the export of techniques.²²

Kennedy's nationalist fervor subsided as rapidly as it arose. The following summer, in a moving *mea culpa*, he recanted completely.²³

The reasons for the sudden about-face are as elusive as those for his economy binge. Kennedy himself attributed the change to his autumn tour of Southeast Asia. Yet it was immediately following this very trip that he lectured the Boston Chamber of Commerce about "Uncle Shylock" and "Uncle Sugar." Doubtless other considerations intervened, including the forthcoming race against Henry Cabot Lodge. But regardless of its source, Kennedy's change of heart appears genuine.

One thing his trip to Asia unmistakably did was to sharpen Kennedy's hostility to colonialism, to French colonialism in particular. His visit to Saigon convinced him of the folly of France's policy in Indochina, and he voiced this criticism in a radio broadcast to his constituents. In Indochina, Kennedy said, "we have allied ourselves to the desperate effort of a French regime to hang on to the remnants of empire." In Iran, "our intervention in behalf of England's oil investments [is] directed more at the preservation of interests outside Iran than at Iran's own development." And our close alliance with the French and British intensified resentment of the U.S.

"Our prestige was high at one time due to the liberation of the Philippines and to the large part we played in the liberation of Indonesia. However, matters have gone steadily down hill since then. We've lost that prestige."

To Ralph Blagden of *The Reporter*, Kennedy was explicit. "He told me with a rather sour grimace," wrote Blagden, "that we are now so deeply extended in Europe that we might as well continue our present policy. British and French colonialism worry Kennedy considerably. Yet his vigorous support of Franco's Spain raises the question of whether he is concerned so much about the enslaved as over the identity of the enslaver."

"Somehow," said Blagden, "such retreats and advances, such reservations and contradictions suggest that Kennedy has not yet achieved very solid convictions. Is he a parvenu in world thinking who will find sure footing, or will he develop into a 'reservationist' whose reservations could represent the margin of failure?"²⁴



ELECTED TO the Senate in 1952, John Kennedy pursued his concern for national security. At first, this concern focused on three areas: the war in Indochina, the underdeveloped world, and the Dulles doctrine of massive retaliation. Kennedy's interest in Indochina led to subsequent concern with Algeria. And both were outgrowths of his continuing impatience with colonialism, an impatience which caused him to focus increasingly on the problems of the underdeveloped world as his Senatorial career progressed. His criticism of massive retaliation drew his attention to alternative national strategies, and by 1960 he was widely regarded as a leading spokesman for increased defense expenditures, expanded missile development, and improved conventional capabilities.

Kennedy's concern with Indochina sprang from his visit in 1951. Already dubious of French efforts to pacify the area, his apprehension increased as the war progressed. France seemed unable to win the war alone and unwilling to grant the Vietnamese the independence which might rally them. For Kennedy the message was clear. Without independence, the Associated States of Cambodia, Laos, and Vietnam would not fight. And without their assistance, the war could not be won. The French were regarded by many in Vietnam as oppressors; the rebel forces, as liberators. The majority of the population, as Kennedy told the Senate in 1953, "appears to be in sympathy with the Communist movement of Ho Chi Minh."²⁵ Kennedy supported whatever was necessary to

win in Indochina, including the possible commitment of U.S. manpower. But victory would be impossible, he insisted, without popular support.²⁶

Much the same was true in Algeria, although there the issue was less clouded by Communism. As Kennedy saw it, the struggle was between colonialism and independence; and the United States, if it was to retain its credentials as a champion of freedom, had no choice but to encourage independence. That France was America's ally complicated the problem but did not relieve the United States of its obligation. Much more was at stake than just Algeria: America's relation to the entire uncommitted world was involved, and the U.S. could ill-afford to be identified with the remnants of colonialism.²⁷

Kennedy's Algerian speech, when it was delivered in 1957, caused a momentary sensation. In Washington, Paris, and Algiers, officials were appalled, and even Kennedy later allowed that the word "independence" might have been too precise. Nevertheless, the burden of the speech, that the West must reshape its relation to the emerging nations of Africa and Asia, was as prophetic as it was sound. From 1957 onward, it was the reshaping of this relation that occupied a substantial portion of Kennedy's time.

Appointed to the Foreign Relations Committee in January 1957, Kennedy soon became chairman of the Subcommittee on African Affairs. In that capacity he labored diligently to promote Africa's economic development and for the speedy removal of the remnants

of colonialism. The future of Africa, he contended, would seriously affect the future of the United States.

The role of India and the Middle East also loomed large in the affairs of the free world, and Kennedy repeatedly sought to insure U.S. assistance for their peaceful development. Although he supported the Eisenhower Doctrine for the Middle East, he did so reluctantly, stressing the need for something more than a military response. Participation in the Military Committee of the Bagdad Pact, he suggested, would make sense only if it were part of a comprehensive policy for the Middle East: "a policy which had purposes and effects that could be understood and accepted by all nations in that area—a policy which attacked all of the major problems of the Middle East with consistency and foresight, instead of rushing, in helter-skelter fashion, from one crisis to another, alarming our friends, antagonizing those whom we want to be our friends, and thoroughly confusing the American people in the process."

Kennedy's concern for India was late blooming, but as with many converts, the ardor of his affection eclipsed the tardiness of his resolve. Beginning in 1958 he led Congressional efforts to accelerate India's economic development. For him, India was of cardinal importance. The subcontinent represented over 40 percent of the population of the uncommitted world. It stood in direct antithesis to the ideological and economic forces of Red China. The alternatives to India's failure were unthinkable. Yet in 1958 the outcome was far from clear. Were India to fail, were democracy not to pass the test there, the course of that vast area "from Casablanca to the Celebes" would be largely determined.

In his concern for the underdeveloped world, Kennedy recognized that conditions there often precluded liberal, democratic solutions. Self-determination, independence, and financial aid on the order of the Marshall Plan frequently were insufficient in an environment empty of positive democratic purpose. America must be patient, must come to terms with the new and virulent strains of nationalism,

and must not "interpret their meanings too much against the backdrop of our own historic experience."

On military policy Kennedy's views remained fixed: the United States should maintain forces in being to deter and defeat aggression at any point on the spectrum of violence. The doctrine of massive retaliation elicited his immediate skepticism. As announced by Secretary Dulles in 1954, "the way to deter aggression is for the free community to be willing and able to respond vigorously at places and with the means of its own choosing." Translated into military potential, this implied primary reliance on nuclear weaponry. Lesser incursions would be thwarted by the threat of instant retaliation against the aggressor's homeland.

Like many, Kennedy was incredulous. At what point, he asked, would the threat of atomic weapons be used in the struggles in Southeast Asia? And what about other areas where the "aggression" was mounted by native insurgents? Would the United States employ its weapons of massive destruction against the Soviet Union in such a circumstance? For Kennedy, massive retaliation was a policy four years too late. Like many diplomatic schemes, it was designed to prevent the last war, not the next one. And while it may have been effective in preventing another Korea, it was singularly unsuitable to meet the more frequent challenges of lesser intensity.

Thus Kennedy resisted all efforts by the Eisenhower Administration to retaylor U.S. forces along the lines of the "New Look." He opposed reduction of Army ground forces from nineteen divisions in 1954 and warned against extending our commitments around the world at the very time when we were reducing our capacity to meet those commitments. During the various crises over Quemoy and Matsu, for instance, Kennedy sided vehemently with the Army Chief of Staff, General Ridgway, against additional U.S. involvement.²⁸ As the size of the active Army shrank during the lean years of the Fifties, Kennedy's was a voice in the wilderness (though often joined by Senators Symington, Jackson, and

Johnson) demanding greater conventional preparedness.

It was also Kennedy who dramatized what Lieutenant General James A. Gavin and others labeled the "missile gap": a period, in Gavin's words, "in which our own offensive and defensive missile capabilities will lag so far behind those of the Soviets as to place us in a position of great peril." The cause for the impending gap, as Kennedy saw it, was national complacency and "our willingness to place fiscal security ahead of national security. We tailored our strategy and military requirements to fit our budget—instead of fitting our budget to our military requirements and strategy. . . . We have been passing through a period aptly described . . . as 'the years the locusts have eaten.'"²⁹

While the approaching missile gap was the most startling, Kennedy found similar inadequacies in virtually every category of the American arsenal. In 1953, said Kennedy, both the Russians and the United States adopted a "new look" policy de-emphasizing ground forces. "Generals Zhukov and Ridgway both opposed these cuts in their respective countries; and in 1955, Zhukov with Khrushchev's help, won the battle which Ridgway lost. Khrushchev expanded, reorganized and, more importantly, modernized and made more mobile Soviet ground forces and conventional weapons. New tactical nuclear weapons and tanks were added to the arsenal. A whole new naval fleet was developed, including the world's largest submarine fleet—much of it equipped with missiles."

To meet this threat U.S. retaliatory power was not enough. It could not deter limited Communist encroachments—along the access arteries to Berlin, for example—nor could it protect the uncommitted nations against guerrilla wars of "national liberation." Small atomic weapons were not the answer because even the smallest atomic weapon would unleash 100 times the destructive power of World War II's largest conventional bomb. And because these so-called tactical nuclear weapons produced radioactive fallout, the people in the area "would not regard . . . the resulting holocaust a very limited war." Ken-

nedy's solution was threefold: an airborne alert for SAC ("as long as it is our chief deterrent"); an accelerated missile program "in order to hasten the day when a full, mobile missile force becomes our chief deterrent"; and increased emphasis on conventional forces, including the necessary airlift and sealift capacity to deploy them wherever necessary.

As 1960 approached, the question of U.S. security loomed large on the electoral horizon. The missile gap, massive retaliation, the "New Look," and the continuing conflict between fiscal mandates and defense requirements occupied a prominent place in the discussions of both parties. John F. Kennedy was a major participant in that debate well before his nomination as the Democratic candidate for President. Throughout the Fifties he had championed larger defense budgets, had opposed the initial cut in Army ground strength in 1953, and had criticized the massive retaliation straitjacket into which the defense establishment had been thrust. Recognizing the inherent rigidity of massive retaliation, he sympathized with the pleas of the Army for greater emphasis on conventional weaponry as an alternative between nuclear holocaust and piecemeal surrender. He was intimately familiar with the writings of the Army generals (Ridgway, Taylor, Gavin, Medaris) forced into retirement because of their inability to support the impending atrophy of U.S. ground forces.³⁰ He followed closely the critical reports of the Killian Committee on the missile gap (1955); the Gaither Committee in 1957: "A nation moving in frightening course to the status of a second-class power"; the Rockefeller Brothers Fund in 1958: "The United States is rapidly losing its lead over the USSR in the military race"; former Secretary of Defense Robert A. Lovett: "We are doing something short of our best"; and, of course, the flood of critical books and articles from America's academic community.³¹

The difficulty with our defense effort, according to Kennedy, was that reliance on massive retaliation had stultified the development of any alternative. The United States, he charged, had developed a Maginot Line

mentality by concentrating on a strategy which may never be used, which may collapse in crisis, and which dooms us either to inaction or the acceptance of inevitable defeat.

We have extended our commitments around the world, without regard to the sufficiency of our military posture to fulfil those commitments. Changes in our defense status are rarely reflected in our diplomatic policies, pronouncements and planning. The State and Defense Departments negotiate with each other at arm's length, like so many Venetian envoys, without decisive leadership to break through the excess of bureaucratic committees, competition, and complacency. We think of diplomacy and force as alternatives to each other—the one to be used where the other fails—as though such absolute distinctions were still possible.

In recent years, said Kennedy, the U.S. has heard a good deal about an alleged quotation from Lenin that the destruction of the capitalist world would result from overspending on armaments. "I would say that has probably been the most valuable quotation the Communists have had other than 'Workers of the World, Unite.'" As a result the United States emphasized economic security instead of military security, and "this policy will bring us into great danger within the next few years."

"For the next President of the United States, whoever he may be, will find that he has considerably more to do than 'stand up to Khrushchev,' balance the budget, and mouth popular slogans, if he is to restore our Nation's relative strength and leadership." Unless immediate steps are taken, the failure to maintain our relative power of retaliation will "expose the United States to a nuclear missile attack." Until our new solid-fuel missiles are available in sufficient quantities, we will be compelled to make do with an inferior weapon system. There are no Polaris submarines on station for an emergency, no hardened missile sites, and no adequate air defense. "Our missile early warning system . . . is not yet completed. Our IRBM bases—soft, immobile, and undispersed—invite surprise attack. And our capability for conventional war is in-

sufficient to avoid the hopeless dilemma of choosing between launching a nuclear attack and watching aggressors make piecemeal conquests."

"The hour is late, but the agenda is long," Kennedy said. "First, we must make invulnerable a nuclear retaliatory power second to none—by making possible now a stopgap air alert and base-dispersal program—and by stepping up our development and production of the ultimate missiles that can close the gap and will not be wiped out in a surprise attack—Polaris, Minutemen, and long-range air-to-ground [Skybolt] missiles—meanwhile increasing our production of Atlas missiles, hardening our bases, and improving our continental defense and warning systems. . . .

"Second, we must regain the ability to intervene effectively and swiftly in any limited war anywhere in the world, augmenting, modernizing, and providing increased mobility and versatility for the conventional forces and weapons of our Army and Marine Corps. So long as those forces lack the necessary airlift and sealift capacity and versatility of firepower, we cannot protect our commitments around the globe—resist nonnuclear aggression or be certain of having enough time to decide on the use of our nuclear power.

"Third, we must rebuild NATO into a viable and consolidated military force capable of deterring any kind of attack, unified in weaponry and responsibility."

Fourth, we must improve our capability for antisubmarine warfare; restore our merchant marine; expand our space and military research; and institute a realistic fallout shelter program.

Fifth, "we must reorganize our Defense Department—allocations, roles and missions—in accordance with the logic of modern weapons systems and technology, transforming the Joints Chiefs of Staff into a defense level staff rather than the representatives of the three services, creating an authority which will be directly responsible for stimulating scientific research and discovery and eliminating the duplication of function which has resulted in 39 separate civilian status offices in the Pentagon."³²

Sixth, we must "reexamine the farflung overseas base structure on which much of our present retaliatory strength is based. We must contribute to the political and economic stability of the nations in which our vital bases are located—and develop alternative plans for positions which may become untenable."³³

Impressive as this agenda was, it would be incorrect to paint John Kennedy as an intransigent cold warrior. For during his Senatorial career the strains of international cooperation, disarmament, and peace had nurtured and flourished. When he was elected to the Senate in 1952, Kennedy was still an unformed man in many respects. He had eschewed his youthful idealism, so dominant at San Francisco, and had embraced a considerably more militant nationalism and anti-Communism. To be sure, these crested in 1949 and 1950 with Kennedy's denunciation of the State Department and his votes against development aid, but even in 1952 the traces of neo-isolationism remained strong.

The reasons for Kennedy's return to his earlier liberalism and internationalism were manifold. Doubtless his severe illness in 1954 played an important role. Like Roosevelt's polio, Kennedy's nearly fatal operations probably accelerated a crisis of identity from which he emerged more focused, more purposeful, and more formidable. His Pulitzer Prize account of Senatorial courage³⁴ clearly contributed, for it emancipated him from the narrow conception of a politician's responsibilities to his district. It reopened the vista of political leaders willing to defy public opinion when the cause they stood for demanded it—a theme that had once been so familiar to the author of *Why England Slept*.

His baptism in national politics at the Chicago Democratic Convention in 1956 further removed him from the parochial influences of his Massachusetts constituency. His subsequent campaign for the Presidency, his concern with the larger issues of the day, his expanding audience, and his need to appeal to voters in all regions of the nation widened his horizon further, for what could be so universal to the American electorate as questions of foreign policy and survival? His frequent trips through-

out the country and abroad also helped. As he climbed the political ladder, Kennedy also ascended the intellectual ladder. Always an avid reader, his selections—if we are to believe his many biographers—became more purposeful and pointed.

His election to the Harvard Board of Overseers in 1956 brought him into immediate contact with the Cambridge academic community. His Senate speeches drew on the collective expertise of Harvard and M.I.T.: Galbraith, Schlesinger, Cox, Kissinger, and Rostow. Interest, necessity, and old acquaintances introduced him to the leaders of the national press corps: Krock, Lippmann, Reston, and the Alsops. And perhaps most important, at a time when Kennedy had been unsure, when he was grappling for a place to stand, Theodore Sorensen became a member of his Senate staff. The year was 1953, and Kennedy was in transition. That he would have traveled the course he did, regardless, is likely; but Sorensen's presence no doubt accelerated and reinforced the movement.³⁵

That Kennedy moved decisively after the early Fifties is clear. The purpose of our military policy, he told the Senate in 1960, is peace, not war. The heart of the debate on national security was peace, not politics. "We arm—to parley," he quoted Churchill as saying. For our real goal is "an end to war, an end to the arms race, an end to these vast military departments and expenditures. We want to show our greatness in peace, not in war. We want to demonstrate the strength of our ideas, not our arms." The sentiment had been that of John Kennedy in 1945, but it was now tempered with a new and deeper awareness of what peace involved.

In certain areas Kennedy was explicit. In Berlin, for example, he said we must plan a long-range solution. "We must show no uncertainty over our determination to defend Berlin and meet our commitments—but we must realize that a solution to the problems of that beleaguered city is only possible . . . in the context of a solution to the problems of Germany and, indeed, the problems of all Europe."

Quemoy and Matsu were something else

again. A way must be found to reduce tension in the Formosa Strait without involving the United States in a major war. As he was later to chide Vice President Nixon during the campaign: "He [Nixon] wants us committed to the defense of every rock and island around the world, but he is unwilling to admit that this may involve American boys in an unnecessary or futile war."³⁶ Clearly, Kennedy was not going to become engaged in any war—if he could avoid it.

As for the underdeveloped areas, we must greatly increase the flow of capital—"frustrating the Communist hopes for chaos in those nations—enabling emerging nations to achieve economic as well as political independence and

closing the dangerous gap that is now widening between our living standards and theirs." We must reconstruct our relations with Latin America; we must formulate, with both imagination and restraint, a new approach to the Middle East; and we must greatly increase our efforts to encourage the newly emerging nations of the vast continent of Africa.³⁷

These were the ideas with which John Kennedy approached the Presidency in 1960, and they were the ideas which would guide his subsequent tenure as President. Some were successful, and some decidedly less so. But for the New Frontier they constituted a call to battle.

Toronto, Ontario

Notes

1. And like both Churchill and Roosevelt, Kennedy was skeptical of military rank. "He was unawed," writes Ted Sorensen, "by generals and admirals (even more so once he was President) and had grave doubts about military indoctrination. When still hospitalized by the Navy in 1944, he had written to a friend concerning the super-human ability of the Navy to screw up everything they touch. 'Even the simple delivery of a letter frequently overburdens this heaving puffing war machine of ours. God save this country of ours from those patriots whose war cry is "What this country needs is to be run with military efficiency."'" Theodore C. Sorensen, *Kennedy* (New York: Harper and Row, 1965), p. 18. For an earlier and more sympathetic view, compare John F. Kennedy, *Why England Slept* (New York: Funk, 1940), pp. 222-31.

2. For an impression of Kennedy's Harvard years, see Arthur M. Schlesinger, Jr., *A Thousand Days: John F. Kennedy in the White House* (Boston: Houghton Mifflin, 1965), pp. 77-85. The Harvard thesis was titled: "Appeasement at Munich: The Inevitable Result of the Slowness of the British Democracy to Change from a Disarmament Policy." James MacGregor Burns, *John Kennedy: A Political Profile* (New York: Harcourt, Brace and Co., 1959) remains the best source for Kennedy's early years. For an insightful political commentary, see Selig Harrison, "Kennedy as President," *New Republic*, 27 June 1960. Opponents have their day in Victor Lasky's *JFK: The Man and the Myth* (New York: Macmillan, 1963), pp. 24-69. For Kennedy's wartime service, see Robert J. Donovan, *PT-109: John Kennedy in World War II* (New York: McGraw-Hill, 1961); and John Hersey, "Survival: Lieut. J. F. Kennedy, a P.T. Skipper in the Solomons," *New Yorker*, 17 June 1944, p. 31 ff. Of Kennedy's White House office, William Manchester writes: "Every detail of the office is clear: the naval paintings on the gently curving wall, the framed union jack, Commodore John Barry's sword, the ship model on the mantel. . . ." in *Portrait of a President* (Boston: Little-Brown, 1962), p. 197. For a description of Kennedy's similarly decorated Senate office, see Burns, pp. 201-2. Also see Theodore H. White, *The Making of the President: 1960* (New York: Atheneum, 1961), p. 371.

3. Said Kennedy, "I feel that Chamberlain is to be condemned more as a member of the Baldwin cabinet, which had done so little to wake up the country, or for his own pre-Munich and post-Munich failure to bring to the country the realization of the great dangers with which it was faced, than for the part he played at Munich." *Why England Slept*, p. 193.

4. The most detailed survey of Ambassador Kennedy's views appears in Richard J. Whalen, *The Founding Father* (New York: New American Library, 1964), pp. 225-351. As for his own position, John Kennedy is quoted as follows: "The subject interested me ever since I was over there to see the results of the Chamberlain thing. I wouldn't say that my father got me interested in it. They were things that I saw for myself. No,

the book didn't contain anything that differed with my father's opinions at the time except perhaps in the final part. There was the Chamberlain episode in Munich and all that resentment in America about Munich and I didn't think that it was justified on our part in view of the fact that we weren't prepared to get involved. What right did we have to criticize or be resentful? Then you remember all those fake wooden gun emplacements, decoys and all that? You could see that they weren't prepared." Ralph G. Martin and Ed Plant, *Front Runner, Dark Horse* (Garden City: Doubleday, 1960), pp. 127-28.

5. "We must always keep our armaments equal to our commitments," wrote Kennedy. "Munich should teach us that; we must realize that any bluff will be called. We cannot tell anyone to keep out of *our hemisphere* [italics added] unless our armaments *and the people behind these armaments* [italics in original] are prepared to back up the command, even to the ultimate point of going to war. There must be no doubt in anyone's mind, the decision must be automatic: if we debate, if we hesitate, if we question, it will be too late." (pp. 229-31)

6. Kennedy, pp. xxviii-xxix; also see pp. 185-86.

7. According to Hopkins, ". . . we did everything possible to prevent war—except prepare for it. We know now that those who labor for peace must implement their desires with force. The strength of peace lovers must be greater than that of gangsters." Harry L. Hopkins, "Tomorrow's Army and Your Boy," *American Magazine*, March 1945, p. 104.

Major excerpts of Kennedy's rejoinder are presented in Selig Harrison, "Kennedy as President," *New Republic*, 27 June 1960.

8. According to his campaign biographer, "Kennedy did not arrive in Washington with a full and rounded set of principles. On some issues he was ill-informed; on others, he was unsure of his position and would allow events to rule." Burns, p. 83.

Ted Sorensen concurs: "His performance in the House of Representatives had been considered by most observers to be largely undistinguished—except for a record of absenteeism which had been heightened by indifference as well as ill health and by unofficial as well as official travels."

"The fact of the matter is," Sorensen quotes Kennedy as saying, "that I fiddled around at Choate and really didn't become interested until the end of my sophomore year at Harvard." Sorensen himself is a harsher judge: "Some might say that he fiddled around as a Congressman and really didn't become interested until his sophomore year in the Senate." Sorensen, p. 27. Also see Martin and Plant, pp. 148-55; Arthur Schlesinger, Jr., *Kennedy or Nixon: Does It Make Any Difference* (New York: Macmillan, 1960), p. 24; Manchester, p. 189; Whalen, p. 403; Lasky, pp. 107, 137.

9. In addition to Foreign Affairs, Kennedy pursued a seat on the Armed Services Committee. And like many of his Congressional contemporaries, Kennedy kept his splendid war record

in the foreground. His cryptic, seven-line autobiographical sketch in the *Congressional Directory* referred prominently to his military service: "joined Navy in September 1941; served in P.T. boats in Pacific; retired on April 1945; received Navy and Marine Corps Medal and the Purple Heart; . . ." By 1950, reference to the decorations had been deleted. U.S. Congress, *Congressional Directory*, 80th Congress, 1st Session, p. 51; 81st Congress, 2d Session, p. 53.

Sorensen says much the same thing:

"Clearly he was proud of his military service; his Purple Heart and his Navy and Marine Corps Medal. As a constant reminder of that brush with death, he kept on his desk preserved in plastic the coconut shell on which he had scratched his message of rescue from that far-off Pacific island. As a young Congressman he had been a leader in postwar efforts of the more progressive veterans' organizations to secure passage of a Veterans' Housing Bill. But he was neither a professional warrior nor a professional veteran. He never boasted or even reminisced about his wartime experiences. He never complained about his wounds. When a flippant high school youth asked him, as we walked down a street in Ashland, Wisconsin, in 1959, how he came to be a hero, he gaily replied, 'It was easy—they sank my boat.'" (p. 18)

10. Burns explains Kennedy's independence as follows:

"It was not surprising that Kennedy could ignore the weak party leadership in his district. But how could he dare defy national party leaders like McCormack and Truman, who had the power to help or hurt a young man's national career? 'For one thing,' Kennedy says, 'we were just worms over in the House—nobody pays much attention to us nationally. And I had come back from the service not as a Democratic wheelhorse who came up through the ranks—I came in sort of sideways. It was never drilled into me that I was responsible to some political boss in the Eleventh District. I can go it the hard way against the politically active people. I never had the feeling I needed Truman.'" (p. 100)

11. During the first session of the 80th Congress, Kennedy voted for Greek-Turkish aid (9 May 1947); against the Colmer-Smith-Mundt amendment to the Relief Aid Bill (H.J.Res. 153) prohibiting funds to Russian-dominated countries—an amendment which carried 324-75 and which was supported by his fellow Massachusetts congressman, Christian A. Herter (30 April 1947); against a cut of \$150 million in the European aid program, which carried 205-170 (21 May 1947); and in favor of authorizing legislation (H.R. 3342) for a foreign information service (24 June 1947). During the second session, Kennedy voted in favor of the European Recovery Program (31 March 1948) and the peacetime draft (18 July 1948).

His attendance record, while not perfect, was hardly as bad as one might expect. Of 83 roll call votes during the first session, Kennedy voted "yea" or "nay" on 63 and was paired on 15 others. During the second session, with 162 roll call votes, Kennedy voted on 121 and was paired on 33 others.

12. To an irredentist Polish audience in Roxbury, Massachusetts, in June 1948, he charged the late President Roosevelt with being soft on Communism. According to the *Boston Herald*: "Kennedy Says Roosevelt Sold Poland to Reds." FDR had done so, Kennedy alleged, "because he did not understand the Russian mind." Also in June he spoke on the House floor urging the admission of displaced Polish war veterans to the U.S. "The United States," said Kennedy, "has a real obligation to the valiant Polish soldier. . . . By admitting some of them to the United States we can atone in a small manner for the betrayal of their native country of Poland." *Congressional Record*, 11 June 1948.

13. *Congressional Record*, Vol. 95, Part 1, 25 January 1949, pp. 532-33. At his press conference on 29 November 1961, President Kennedy was asked about his criticism of the Truman Administration's China policy. His answer was as follows:

"I always have felt that we did not make a determined enough effort in the case of China. Given the problems we now see, I think a more determined effort would have been advisable. I would think that in my speech in '49 I placed more emphasis on personalities than I would today.

"And I would say that my view today is more in accordance with the facts than my view in '49. But my—I've always felt, and I think history will record, that the change of China from being a country friendly to us to a country which is unremittably hostile affected very strongly the balance of power in the world. And while there were, there is still, of course, room for argument as to whether any United States actions would have changed the course of events there, I think a greater effort would have been wiser. I said it in '49, so it isn't totally hindsight."

According to Arthur Schlesinger, these early Kennedy speeches "were out of character and remained on Kennedy's conscience for a long time. As late as 1960 he separately expressed both to Theodore H. White and to me his sorrow that he had ever given them." *A Thousand Days*, p. 13 n.

14. Although, curiously, his initial support of President Truman's action was grudging and qualified, Kennedy's early skepticism of U.S. involvement in Korea (a sentiment which quickly faded) is understandable on two counts. First, if there was to be a war in Asia he felt it should be fought by the remnants of the Chinese nationalist army under Chiang Kai-shek. Second, he feared extended U.S. commitment in Asia would curtail resources urgently needed in Western Europe, and Europe, he felt, was by far the more important. See *New York Times*, 13 December 1950. Cf. John P. Mallan, "Massachusetts: Liberal and Corrupt," *New Republic*, 13 October 1953, pp. 10-12.

15. *Congressional Record*, 25 August 1950. During the 81st Congress, Kennedy voted consistently for foreign aid. On 18 August 1949 he voted against the amendment offered by Representative Richards (Dem., S.C.) to cut arms aid to Western Europe from \$635,840,000 to \$580,495,000. The amendment carried 209-151. During the second session he voted to include Korea in the Marshall Plan (H.R. 5330), rejected 191-192 (19 January 1950); in favor of Point Four aid (31 March 1950); against a cut of \$40 million in aid funds for the Far East (31 March 1950); and in favor of the \$1 billion, plus, extension of the Mutual Defense Assistance Act (19 July 1950).

16. U.S. Congress, Senate, *Hearings* before the Committee on Foreign Relations and the Committee on Armed Services, 82d Congress, 1st Session (Washington: Government Printing Office, 1951), pp. 434-35.

17. In Kennedy's words:

"So concerned were our diplomats and their advisers, the Lattimores and the Fairbanks, with the imperfection of the democratic system in China after 20 years of war and the tales of corruption in high places that they lost sight of our tremendous stake in a non-Communist China.

"Our policy, in the words of the Premier of the National Government, Sun Fo, of vacillation, uncertainty, and confusion has reaped the whirlwind.

"This House must now assume the responsibility of preventing the onrushing tide of Communism from engulfing all of Asia." *Congressional Record*, 29 January 1949.

18. "I believe that the armies of Spain could make a substantial contribution to the defense of Western Europe," said Kennedy, "and thus I believe they should share in the arms and equipment we are distributing abroad.

"I can understand the reluctance of some Members to assist Spain. They have two chief objections as far as I can tell: First, by giving Spain military assistance we are strengthening Franco; second, if we help Spain we will lose the support of some Western Europeans.

"I think the answer to the first question is obvious—Franco has been in power for 12 years and he is as strong as ever. As to the second, the situation is so critical . . . that we can no longer afford the luxury of omitting Spain from our defense plans. . . .

"There should only be one qualification before a country becomes eligible for military assistance, and that is: Are they guilty of aggression against other countries? Spain is not." *Congressional Record*, 19 July 1950.

19. *Congressional Record*, 17 August 1951. By \$350 million. Mutual Security Act of 1951 (H.R. 5113), 17 August 1951. The motion was agreed to 186-177.

20. Said Kennedy: "I believe in military assistance to this area and that it is a good thing, but I do not think that we can afford in this country to raise the standard of living of all the people all over the globe who might be subject to the lure of Communism because of a low standard of living." *Congressional Record*, 17 August 1954.

21. "I do not object to giving them economic assistance, but I see no point in giving them \$40 million of military assistance when they are countries not in the line of the Soviet advance. . . . What is the use of tying up \$40 million worth of military equipment in Central and South America?" *Ibid.*

22. *Boston Globe*, 19 November 1951.

23. "Mr. Chairman, [the House was sitting in Committee of the Whole] last year when the bill was before the House, I offered a motion to cut technical assistance in the Middle East. But, this fall, I had an opportunity to visit that area and Southeast Asia and I think we would be making a tremendous mistake to cut this money out of the bill. Many of us feel that the United States has concentrated its attention too much on Western Europe. We will spend several billions for Western Europe in this bill. Yet, here is an area, Asia, where the Communists are attempting to seize control, where the money is to be spent among several hun-

dred million people, and where the tide of events has been moving against us. The Communists are now the second largest party in India. The Communists made tremendous strides there in the last election. The gentleman from Montana [Mr. Mansfield] pointed out that the life expectancy of people in India is 26 to 27 years, and they are increasing at the rate of 5 million a year—at a rate much faster than the available food supply.

"The Communists have a chance of seizing all of Asia in the next 5 or 6 years. What weapons do we have that will stop them? The most effective is technical assistance. The gentleman from Michigan [Mr. Crawford] is right, that the amount of money involved here is not sufficient to prevent their being attracted to the Communists, but it gives them some hope, at least, that their problems can be solved without turning to the Communists. We are planning to spend a very large amount of money in this area for military assistance, which is of secondary importance compared to this program. To cut technical assistance when the Communists are concentrating their efforts in this vital area seems to me a costly and great mistake." *Congressional Record*, 28 June 1952.

24. Ralph Blagden, "Cabot Lodge's Toughest Fight," *The Reporter*, 30 September 1952.

25. *Congressional Record*, 1 July 1953. In addressing the 54th Annual Dinner of the Cathedral Club of Brooklyn, N.Y., on 21 January 1954, Kennedy said: "Indochina is probably the only country in the world where many observers believe the Communist-led element would win a free election." *Congressional Record*, Appendix, 1 February 1954.

26. *Congressional Record*, 6 April 1954. Said Kennedy: "I am frankly of the belief that no amount of American military assistance in Indochina can conquer an enemy which is everywhere and at the same time nowhere, 'an enemy of the people' which has the sympathy of the people."

27. "If we are to secure the friendship of the Arab, the African, and the Asian—and we must, despite what Mr. Dulles says about our not being in a popularity contest—we cannot hope to accomplish it solely by means of billion-dollar aid programs. We cannot win their hearts by making them dependent upon our handouts. Nor can we keep them

free by selling them free enterprise, by describing the perils of communism or the prosperity of the United States, or limiting our dealings to military parts. No, the strength of our appeal to these key populations—and it is rightfully our appeal, and not that of the Communists—lies in our traditional and deeply felt philosophy of freedom and independence for all peoples everywhere." John F. Kennedy, "Algeria," *Congressional Record*, 2 July 1957.

28. *Congressional Record*, 17 June 1959. Also see John F. Kennedy, "A Democrat Looks at Foreign Policy," *Foreign Affairs*, October 1957, pp. 44-59; and "General Gavin Speaks His Mind," *The Reporter*, 30 October 1958.

29. *Congressional Record*, 14 August 1958. The description was by Stanley Baldwin to the House of Commons in 1936. See *Why England Slept*, pp. 140-41. Cf. John F. Kennedy, *The Strategy of Peace* (New York: Harper and Bros., 1960), Popular Library Edition, p. 235, in which Kennedy curiously attributes the quotation to Winston Churchill.

30. Matthew B. Ridgway, *Soldier* (New York: Harper and Bros., 1956); Maxwell D. Taylor, *The Uncertain Trumpet* (New York: Harper and Bros., 1959); James A. Gavin, *War and Peace in the Space Age* (New York: Harper and Bros., 1958); John Medaris, *Countdown for Decision* (New York: Putnam, 1960).

31. Especially Henry Kissinger, *Nuclear Weapons and Foreign Policy* (New York: Harper and Bros., 1957); William W. Kauffmann, "Limited Warfare," in Kauffmann (ed.), *Military Policy and National Security* (Princeton: Princeton University Press, 1956); Robert E. Osgood, *Limited War: The Challenge to American Strategy* (Chicago: University of Chicago Press, 1957); and Bernard Brodie, *Strategy in the Missile Age* (Princeton: Princeton University Press, 1959). All cited by Kennedy in his review of James Gavin's "War and Peace in the Space Age," *The Reporter*, 30 October 1958, p. 35.

32. Advance text of address by Kennedy to the American Legion, Miami Beach, Florida, 18 October 1960.

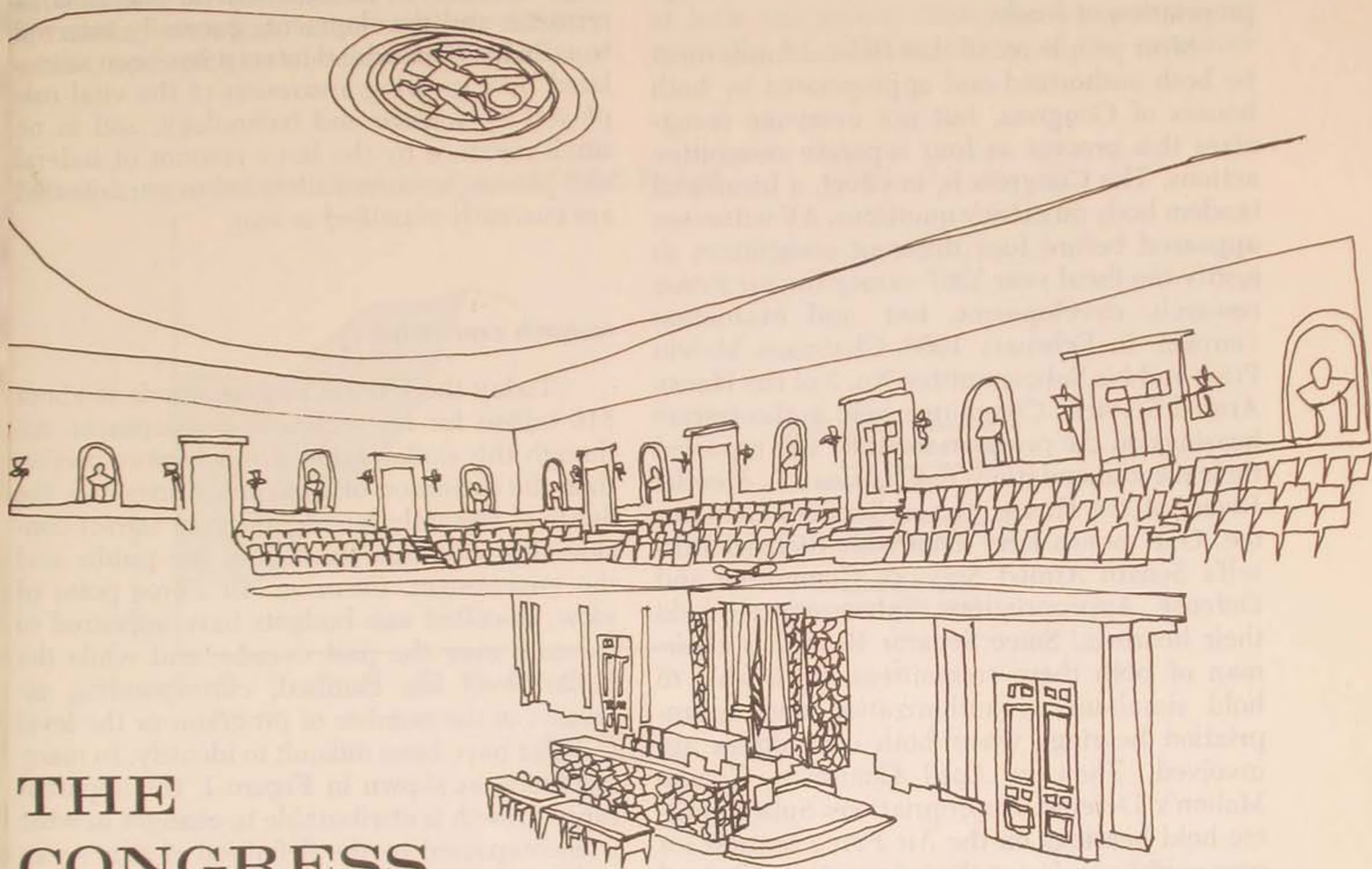
33. *Missiles and Rockets*, 10 October 1960, pp. 12-13.

34. John F. Kennedy, *Profiles in Courage* (New York: Harper and Bros., 1956).

35. See Alan J. Otten, "Theodore Sorensen" in Lester Tanzer (ed.), *The Kennedy Circle* (Washington: Luce, 1960).

36. *New York Times*, 10 (11?) October 1960.

37. *Congressional Record*, 14 June 1960.



THE CONGRESS AND R&D

LIEUTENANT COLONEL ARTHUR D. BARONDES

THE CONGRESS of the United States is often thought of only as the lawmaking branch of the federal government. The popular mental image of the Congress is one of 435 representatives and 100 senators, assembled in their respective chambers, voting yea or nay on new laws for the nation. While this image is accurate for the final Congress-

sional action on legislation, it ignores the bulk of the Congressional workload that lays the groundwork for the climactic voting. This work often involves detailed study and analysis by individual congressmen and their staffs on committee-related business; more frequently, it involves subcommittee and committee studies, hearings and investigations that cul-

minate in legislation, resolutions, and major contributions to national policy. Through these activities the Congress maintains itself as an informed body that can speak with a loud and authoritative voice. Insofar as the Air Force is concerned, the voice of the Congress is heard most clearly through the authorization and appropriation of funds.

Most people recall that federal funds must be both authorized and appropriated by both houses of Congress, but not everyone recognizes this process as four separate committee actions. The Congress is, in effect, a bicameral tandem body on money questions. AF witnesses appeared before four different committees to justify the fiscal year 1967 money for Air Force research, development, test, and evaluation (RDT&E). In February 1966, Chairman Melvin Price and his Subcommittee No. 3 of the House Armed Services Committee held authorization hearings on the program for 1967 and reported their recommendations to Chairman L. Mendel Rivers of the House Armed Services Committee. One month later Chairman Richard Russell's Senate Armed Services Committee and Defense Appropriations Subcommittee held their hearings. Since Senator Russell is chairman of both these committees, he is able to hold simultaneous authorization and appropriation hearings when both committees are involved. Then in April Chairman George Mahon's Defense Appropriations Subcommittee held hearings on the Air Force request for appropriations. Using the information obtained at the authorization hearings, the House and Senate passed separate authorization bills and then conferred to iron out differences. The result, after approval by the President, is an authorization act that places a ceiling on subsequent appropriations. In similar fashion the House and Senate appropriations committees act separately, within the constraints of the authorization, then confer and compromise, and finally appropriate, subject to the approval of the President. On questions as vital as national security, the Congress has an enviable record of being most thorough.

The interests of the Congress are, of course, also directed at areas other than the national defense, though their legislative ap-

proach remains essentially the same. The diverse interests of the Congress routinely cover those areas for which standing committees have been established, plus additional areas of public concern. Although not really a new interest, the Congress has recently focused a large amount of its attention in the area of research and development, generally referred to as "R&D." This added interest has been stimulated by a growing awareness of the vital role played by science and technology, and in no small measure by the large amount of federal and private resources allocated to pursuits that are currently classified as R&D.

research expenditures

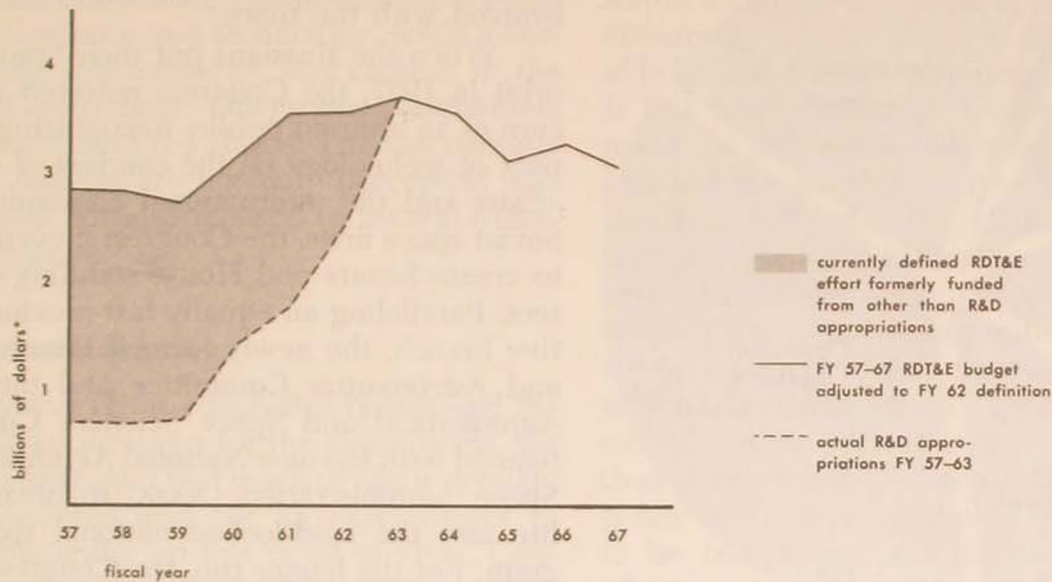
Today the federal budget stands at about \$16 billion for research and development. Although this dollar value is much more precise than the definition of what constitutes R&D, the figure is certainly large enough to attract considerable attention from both the public and the government. From an Air Force point of view, so-called R&D budgets have appeared to increase over the past decade; and while the dollar level has climbed, corresponding increases in the number of programs or the level of effort have been difficult to identify. In many instances, as shown in Figure 1, the apparent rapid growth is attributable to changes in what is encompassed by the definition of R&D. As an example, the Air Force research, development, test, and evaluation budget, often referred to as Air Force R&D, constitutes \$3.058 billion of the President's FY 1967 budget—a substantial sum indeed. Yet of that amount, \$675 million is for management and support activities that include, for example, housekeeping functions at Air Force Systems Command bases. As shown in Figure 2, this amounts to some 20 percent of our budget. While the functions carried out in this area are essential for the conduct of our overall activities, their inclusion in R&D is more or less arbitrary.

In reality, then, the \$16 billion federal R&D figure attracts a great deal of attention and is often quoted, but much of the subsequent public and Congressional interest seems really

to be directed at that narrower field of research—laboratories and scientists—which is funded at a much lower level. As recorded by the National Science Foundation, the federal budget contains about \$2 billion for basic research; and within the Air Force we identify less than \$100 million for the conduct of basic research. A similar situation exists within industry, where, according to a recently published sur-

veying administration, appropriating funds, and serving their constituents. In recent years the Congress has assigned broad R&D responsibilities to established standing committees, such as the Armed Services Committees; to newly created standing committees, such as the House Science and Astronautics Committee; and to at least one select committee on government research. In addition, many of the executive

Figure 1. Apparent growth of Air Force RDT&E budget



*not adjusted for changes in purchasing power

vey, over \$15 billion is allocated to R&D^o but with only \$1.1 billion of it going for basic research to seek new scientific discoveries. One of the consequences of imprecise and varying definitions is that the interest attracted to R&D, however it is defined, is that associated with a \$25 to \$30 billion price tag, while much of the subsequent activity by Congressional committees is that associated with the much smaller aggregate of \$2 to \$3 billion in research.

This apparent concentration of close to \$30 billion in public and private R&D funds has not escaped the watchful eyes of our congressmen, charged as they are with lawmaking, oversee-

^oSome of this \$15 billion can be traced back to federal contracts and grants.

agencies that engage in R&D justify their programs before separate authorizing committees and appropriating subcommittees. A recent count of R&D budget authorizing committees totaled no less than eight in the House of Representatives alone. Indeed, the Congress has not neglected its stewardship of federal funds in the broad area of research and development.

evolving interest in research

The current level of Congressional interest in R&D appears to be at a high point, but it is by no means a new or unique interest. Some might argue that the 1803 Congressional grant of \$2500 for the Lewis and Clark expedition

represented the first Congressional interest in research, whereas others might point to the 1830 Congress-sponsored study of boiler explosions as the first research grant. Certainly most would agree that the 1843 grant of \$30,000 to Samuel F. B. Morse for telegraphy studies marks an early interest in R&D by the Congress.

Over the years the Congress has continued to express its interest in the important areas of

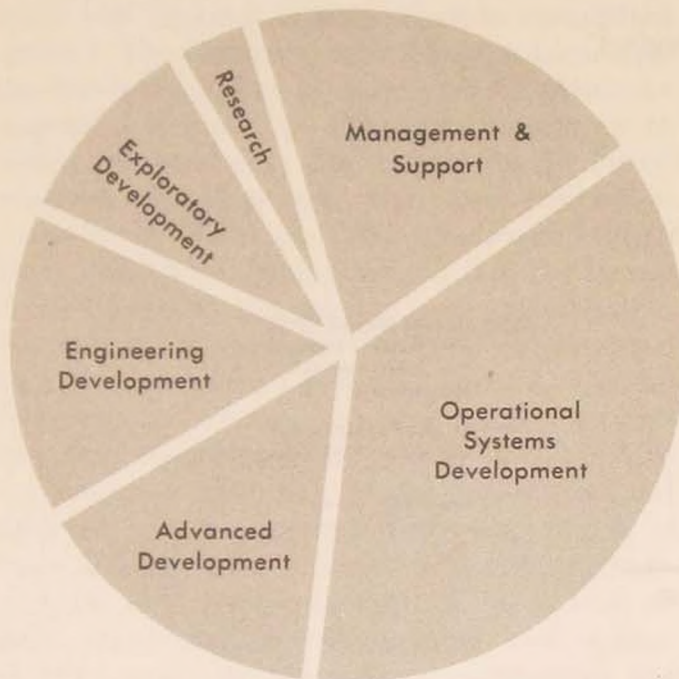


Figure 2. Allocation of R&D dollars

science and technology. The 1849 Senate select committee that investigated and recommended in favor of a \$20,000 grant to work on electromagnetic motive force was perhaps the first select committee on research; it may also have been the first to call the attention of the Congress to the risk of failure in the conduct of research. A decade and a half later—in 1863 and two years into the Civil War—the Congress established the National Academy of Sciences in full recognition that national security and science are closely related. In 1887 the Hatch Act provided for agricultural experiment stations. Other research mileposts are marked by the National Advisory Committee for Aeronautics in 1915; the National Research Council

in 1916; and the National Cancer Institute Act in 1937, which authorized research grants. Subsequent legislation approved research grants for all National Institutes of Health in 1944, for the National Science Foundation in 1950, for the Atomic Energy Commission in 1956, and finally, by Public Law 85-934 in 1958, for all federal agencies conducting R&D. The National Aeronautics and Space Administration was also established in 1958, confirming space as a major field of federal research. Thus it is evident that the interest of the Congress in research and science is not new; rather, it has evolved with the times.

When the Russians put their Sputnik into orbit in 1957, the Congress reflected the concern of an aroused public. Recognizing the impact of technology on the conduct of national affairs and the international consequences of Soviet space firsts, the Congress moved rapidly to create Senate and House standing committees. Paralleling an equally fast-moving executive branch, the newly formed House Science and Astronautics Committee and the Senate Aeronautical and Space Sciences Committee teamed with the new National Aeronautics and Space Administration (NASA) to breathe new life into the land-locked national space program. For the longer run, the Congress, which had joined with the executive branch in the creation of the National Science Foundation in 1950, placed renewed emphasis on strengthening basic research and education in the sciences. To move even closer to the executive branch, the Congress suggested in 1961 that a focal point be established within the executive branch to provide a clear communication channel between the executive and legislative branches on science and technology—a suggestion that led to creation of the Office of Science and Technology the following year.

In the past three years alone, the Congressional interest in R&D has manifested itself in unparalleled scope and depth. Some of the highlights include the 1963 Congressional requirement for specific authorization of Defense RDT&E funds prior to appropriation (Public Law 87-436). In that same year the House of Representatives also created its Select Committee on Government Research, chaired by

Representative Carl Elliott. The Elliott Committee reports provide a most comprehensive analysis of the federal research situation. Then in 1964 the Congress established a Science Policy Research Division in the Legislative Reference Service of the Library of Congress. Also in 1964 Chairman Emilio Daddario's subcommittee of the House Science and Astronautics Committee began its penetrating study of the geographic distribution of federal research funds. In the following year Chairman Henry Reuss's Subcommittee on Research and Technical Programs, of the House Government Operations Committee, examined the breadth of federal science and technology, while a corresponding subcommittee was created in the Senate Government Operations Committee, under Chairman Fred Harris. The R&D interests of the Congress are not only perceptive and widespread but also focused in several different committees.

a national science policy

By virtue of the committee system and the variety of applications for the R&D process, the Congress has found that much of R&D is strongly mission-oriented and not an easy subject to handle. Summing up this point of view, Congressman Daddario said, "The fragmentation of Federal Science among committees of Congress poses a problem of congressional management of its own affairs so that it can give better attention to the whole of federal scientific activities." Put another way, Congressman Joseph Karth stated, "I won't pretend that the present congressional machinery is entirely adequate for our work in these new areas of technological concern; we are, I think, fragmenting our overall responsibility too severely. However, we are seriously examining improvements." The Congress is now trying to evolve the ways and means to focus its pluralistic structure on what some would find convenient to view as a monolithic federal R&D program. Looking at the entire operation of the government, the Joint Reorganization Committee—co-chaired by Senator A. S. Mike Monroney and Representative Ray J. Madden—is addressing the major problem areas of matching the gov-

ernment to the demands of today's society. Other committees are focusing their attention specifically on technology and its interaction with society.

As viewed by the committees, there are fundamental questions that should be answered, and each of the committees is contributing in its own way to those answers. Paramount among the questions is that of a national science policy. Although national policies are frequently the aggregate effect of public statements, federal budgets, and concentrated resources, the all-pervasive nature of R&D obscures a definitive, concrete policy. Under such circumstances, the absence of clearly identifiable broad strategy for science and technology is less surprising than frustrating. The very nature of the mission-oriented executive agencies and the parallel Congressional committee structure highlights the alignment of policies with mission areas rather than with functional areas. As a consequence, committee views often conflict. For instance, one authorizing committee may view research grants as the preferred method for government support of research while another committee may be opposed to their general use. The result is that a national policy in the functional area of research tends to be fragmented and lacks clear definition whereas policy for research in the mission areas, such as the defense research sciences, is centralized and relatively well defined.

Another question deals with the determination of research priorities—that is, Are resources being allocated to those research areas that offer the greatest potential benefits to our society? Although this is a different question, its answer is clouded by the same considerations that tend to restrict overall research policy determinations. Certainly the Department of Defense and the Congressional Armed Services committees would evaluate priorities in a substantially different order than the Health, Education, and Welfare groups. As an example, the priority accorded water pollution research is much higher in HEW than it is in Defense. While the military departments certainly appreciate the importance of all research, they are obligated to concentrate on those sciences that offer breakthroughs and innovations that

will benefit national defense. Most certainly the other executive agencies take a similar view of research in their mission areas. Small wonder, then, that the Congress is concerned over the possibility of research gaps and duplications or that it has taken on itself the role of exploring and correcting what may appear to be deficiencies in an elusive overall federal research program.

CONGRESSIONAL involvement in R&D is one of continuing interest rather than any new concern. What is new is the breadth of Congressional interest in R&D, primarily in science and research. In this area, the Congress has begun to come to grips with the deceptive nature of "R&D" monies and the conflicts between the mission-oriented view of agencies such as the Department of Defense and the function-

oriented view of the science and technology groups. In this latter sense, the Congress is as aware as the executive branch that R&D is not a mission area itself but rather is one of the more important means of achieving mission objectives. So the problem of a fragmented federal R&D program, consistent with correspondingly aligned executive agencies and legislative committees, is perhaps more apparent than real. The development programs, with their heavy demands for R&D dollars, are inseparable from the mission areas that they must support; and these development programs are, in turn, dependent on a sound mission-oriented research base. Still, there are questions of research gaps and possible unwarranted duplication that must be explored in the national interest, and it is the role of the Congress to do this.

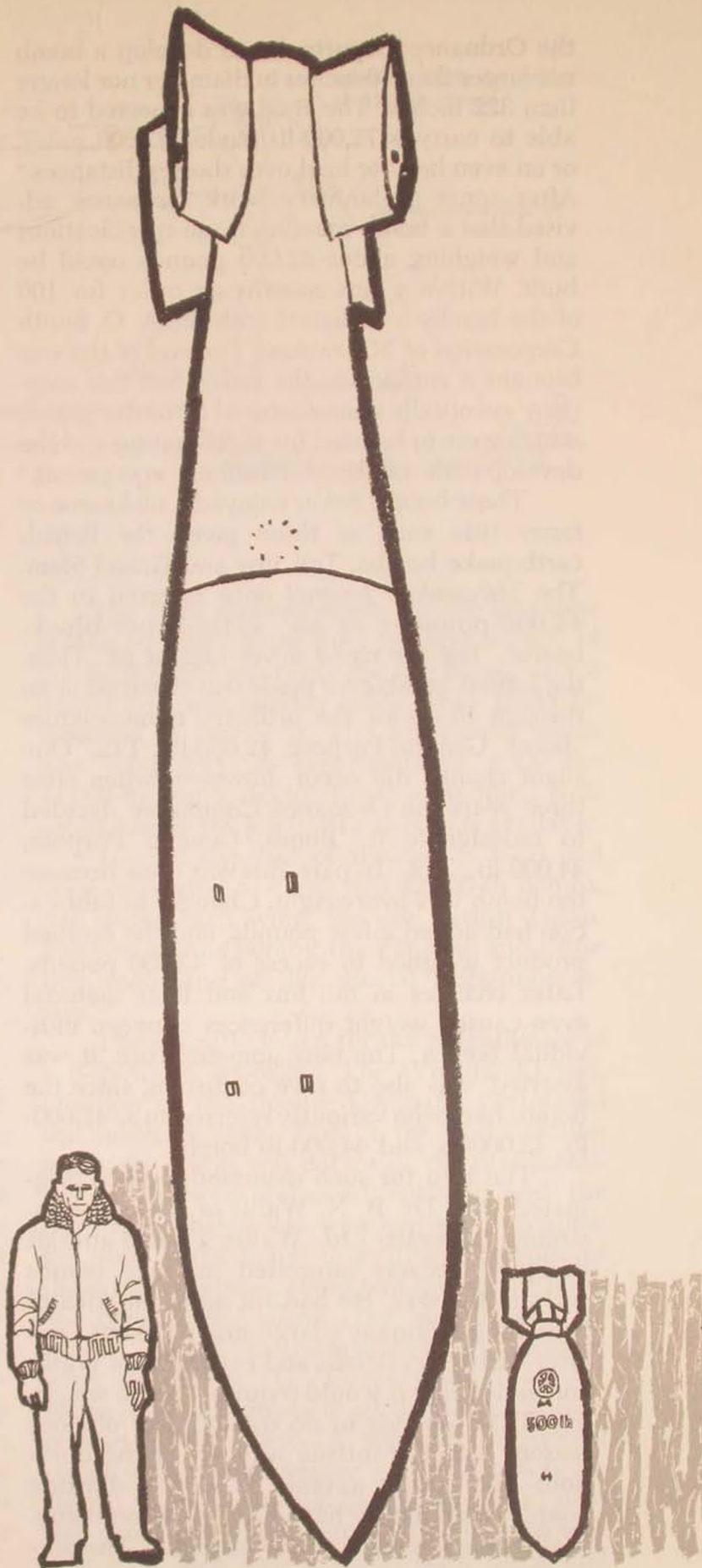
Hq United States Air Force

THE EXTRA-SUPER BLOCKBUSTER

DR. WILLIAM S. COKER

ON 5 MARCH 1948 a U.S. Air Force B-29 Superfortress dropped the world's largest conventional bomb on the test range at Muroc AFB, California. This 22-ton missile was nearly twice as heavy as the largest bomb previously dropped, which weighed a mere 12½ tons.¹ The bomb, oldest of aircraft weapons, had come a long way since 1 November 1911, when Lieutenant Gavotti of the Italian Army threw the first one from an aircraft. Although the weight of Gavotti's bomb is unknown, it was described as "a little larger than an orange."² The bomb dropped from the Superfortress in 1948 weighed almost 44,000 pounds. It was 26 feet 10 inches long and 4 feet 6 inches in diameter. The largest bomb dropped during World War II, the British Grand Slam, weighed a little over 22,000 pounds.³

The size and weight of bombs have always been limited by the capability of aircraft to carry them. In January 1945, with the prospect of getting the B-36 into production before the war ended, the Army Air Forces requested



the Ordnance Department to develop a bomb not larger than 60 inches in diameter nor longer than 322 inches. The B-36 was expected to be able to carry a 72,000-lb payload 4600 miles, or an even heavier load over shorter distances.⁴ After some preliminary work Ordnance advised that a bomb meeting those specifications and weighing about 42,000 pounds could be built. Within a few months an order for 100 of the bombs was placed with the A. O. Smith Corporation of Milwaukee. The end of the war brought a cutback in the order, but this company eventually manufactured 57 of the giants, which were to be used for flight-testing and the development of bomb-handling equipment.⁵

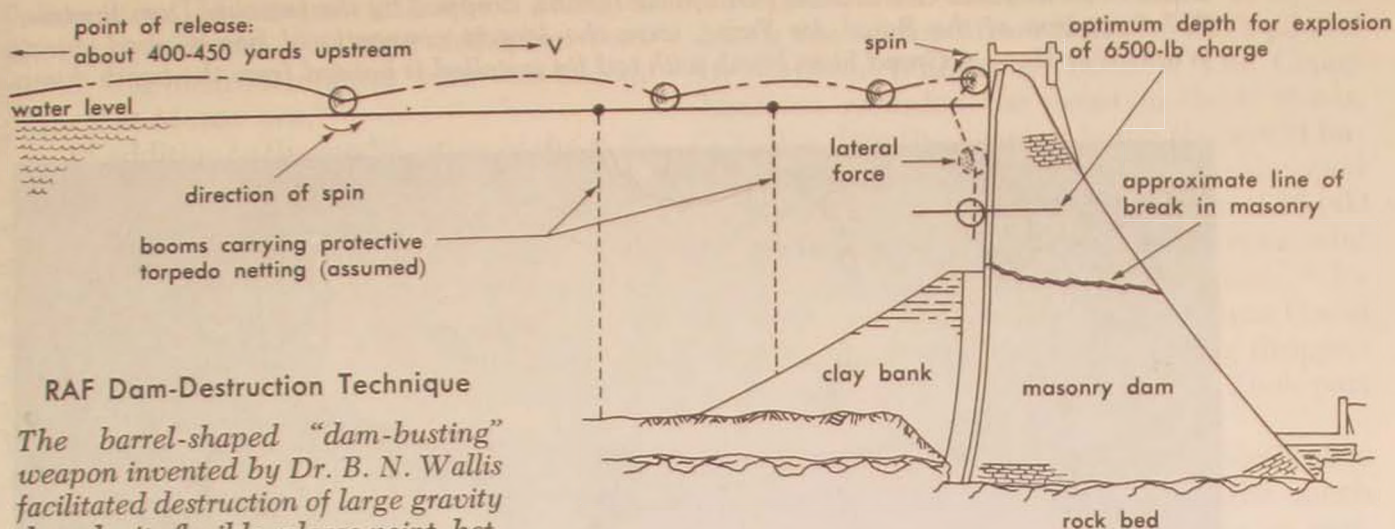
These bombs never enjoyed a nickname or fancy title such as those given the British earthquake bombs, Tall Boy and Grand Slam. The *Milwaukee Journal* once referred to the 44,000-pounder as an "extra-super-blockbuster," but the name never caught on. Thus, the largest bomb ever made was destined to go through life with the ordinary nomenclature "Bomb, General Purpose, 42,000-lb., T12." One slight change did occur, however, when after three years the Ordnance Committee decided to redesignate it "Bomb, General Purpose, 44,000-lb., T12." In part, this was done because the bomb was overweight. Changes in fabrication had added a few pounds, and the finished product weighed in excess of 43,000 pounds. Later changes in tail fins and filler material even caused weight differences between individual bombs. The new nomenclature, it was asserted, was also to save confusion, since the bombs had been variously referred to as 42,000-lb, 43,000-lb, and 44,000-lb bombs.⁶

The idea for such mammoth bombs originated with Dr. B. N. Wallis of Vickers-Armstrongs (Aircraft) Ltd. Wallis, a noted aircraft designer, became interested in huge bombs early in the war. He had hit upon the idea of breaching Germany's large gravity dams, and after early calculations and experiments Wallis concluded that it would require a bomb weighing 70,000 pounds to do the job. For obvious reasons a 35-ton missile was out of the question: The largest aircraft on British drafting boards could hardly have lifted a 10-ton bomb. Wallis was forced to revise his plans. The out-

growth was the 9250-lb "dam-busting" weapon or "store." This weapon arrived on target in an ingenious manner. Instead of being dropped on the target, this barrel-shaped bomb was released several hundred yards upstream and skipped over the water until it hit the upper structure of the dam, then its spinning motion caused it to sink to the right depth to destroy the dam. The Moehne and Eder dams in Germany were breached on the night of 16-17 May 1943 by use of this plan and weapon. The courage and daring of the RAF bomber crews of 617 Squadron who flew the mission were in no small part responsible for its great success.⁷

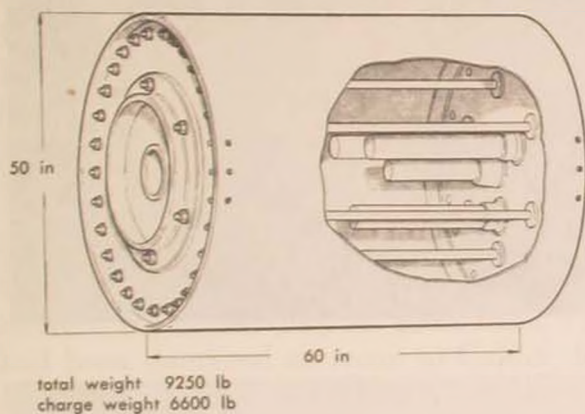
Wallis had also developed the principle of the so-called earthquake bomb, which was designed to bury itself in the ground close to its objective, the subsequent underground explosion creating an effect similar to an earthquake. The 12,000-lb Tall Boy was the first of the earthquake bombs produced. Its bomb blast was so great that it "caused entire buildings to disintegrate and collapse into rubble."⁸ The Tall Boy was first used on the night of 8 June 1944 when 19 of them were dropped on the Saumur railway tunnel. One direct hit caused the roof of the tunnel to fall in. By the end of the war in Europe, 854 Tall Boys had been dropped on concrete submarine pens, E-boat bases, and V-weapon sites, as well as other targets in Germany and occupied countries.⁹

The success of the Tall Boy and the need for an even larger bomb led to the development of its big brother, the 22,000-lb Grand Slam. Great secrecy surrounded the manufacture of the Grand Slam, and the company that made the casing labeled it a "boiler." This subterfuge apparently fooled no one, for in the pubs around Sheffield it was ingloriously called "the big bastard." The first Grand Slam was test-dropped on the same night that two of them were scheduled for a combat mission. Two Lancasters had been modified to carry them, and while waiting for the weather to clear at their target, the Bielefeld Viaduct, the RAF crews received this terse message concerning the experimental drop of the bomb, "The beast went off all right!"¹⁰ First used operationally at Bielefeld on 14 March 1945, 41



RAF Dam-Destruction Technique

The barrel-shaped "dam-busting" weapon invented by Dr. B. N. Wallis facilitated destruction of large gravity dams by its flexible release point, better assurance of a hit, and avoidance of submerged protective devices.



Grand Slams were dropped by the RAF before the war was over.¹¹

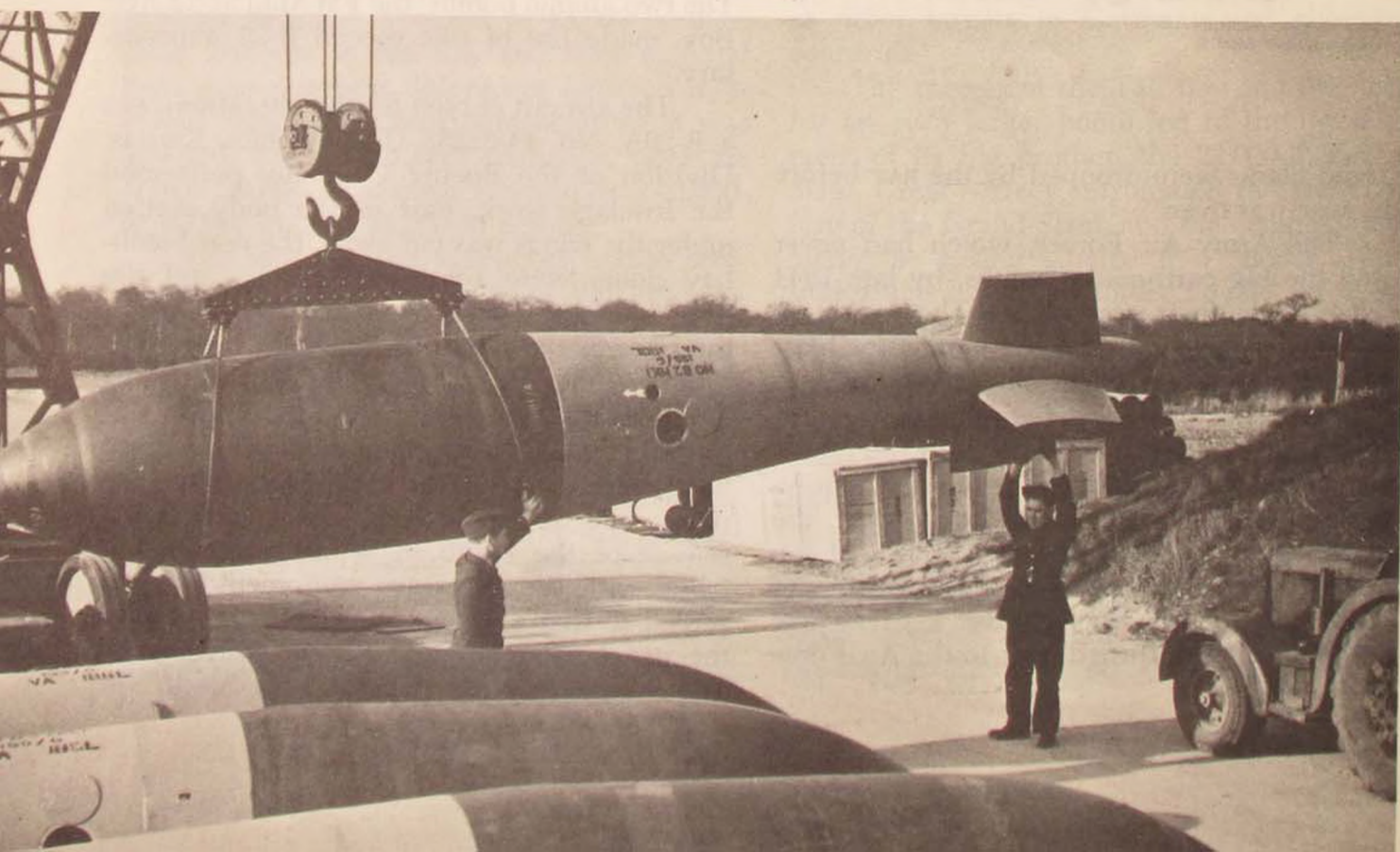
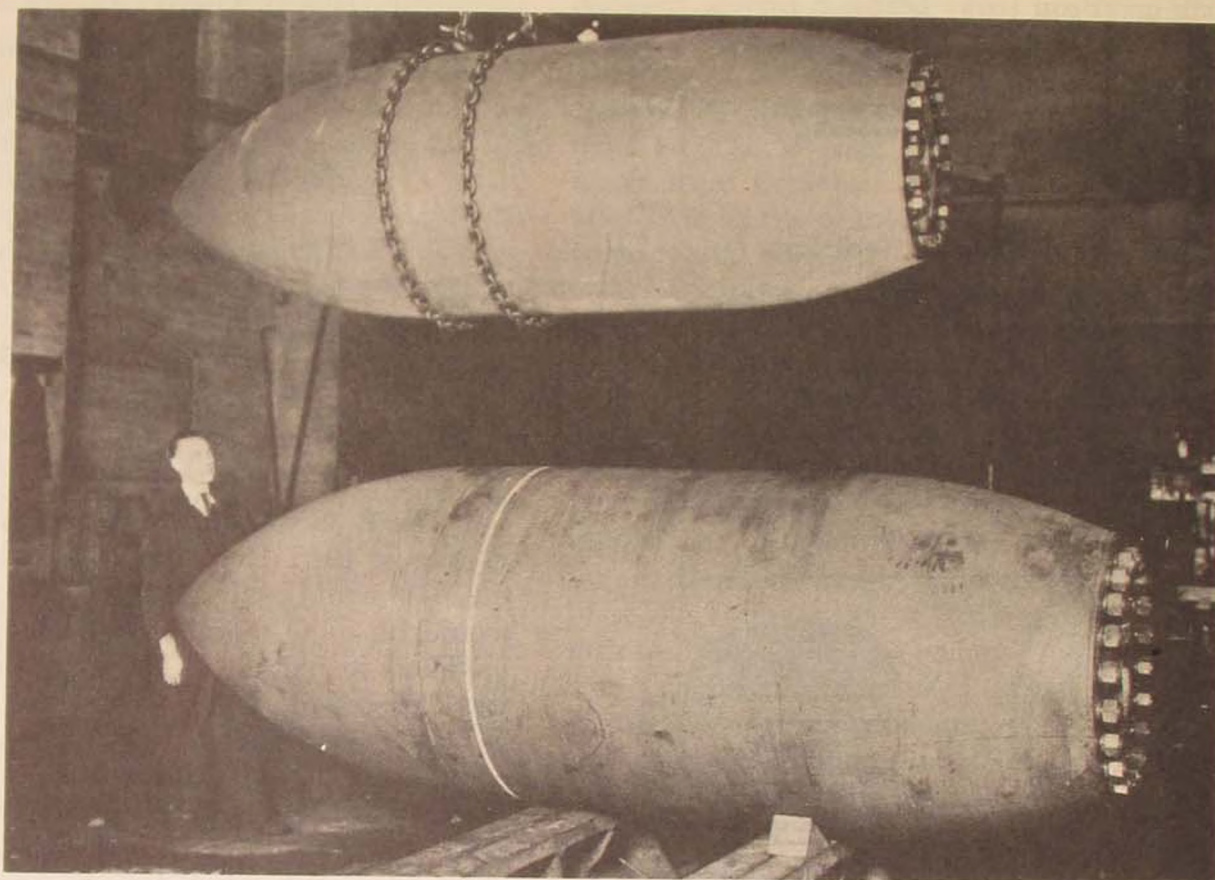
The Army Air Forces, which had never used the big earthquake bombs, by late 1944 began to see their possibilities. They could be employed as general-purpose bombs for blast and fragmentation effect, to create cave-ins and earth shock, and to get at important underground installations. In addition to the development of the T10 and T14, the U.S. equivalents of the Tall Boy and Grand Slam, the anticipated bomb-carrying capabilities of the B-36 led not unnaturally to the development of the colossal T12. Shortly after V-J Day, five of the T12s were turned over to the Air Force for testing.¹²

The B-36 was test-flown for the first time in August 1946. Even then the first models of the B-36 could not carry the big bomb, and it would be some months before they could be modified to handle it. The Air Force, which was interested in experimenting with the 44,000-lb bomb, decided that a modified B-29 could handle the job until a B-36 was available.

Toward the end of the war a B-29 had been converted to carry two 22,000-lb bombs, one under each wing, for use against Japan. The two atomic bombs, the Fat Man and Little Boy, made use of this special B-29 unnecessary.¹³

The aircraft chosen for the alterations was a B-29A, No. 44-62263. The Wichita, Kansas, Division of the Boeing Company performed the fuselage work. Part of the body section under the wings was cut away, the rear bomb-bay doors were removed entirely, and the front bomb-bay doors were cut away to allow the nose of the bomb to protrude. In spite of these modifications, about half the missile hung out beneath the plane. The aircraft also required special instrumentation to measure wing deflection, "G" forces exerted on the plane, and acceleration of the aircraft upon release of the bomb. A separate instrument panel with the necessary equipment was installed so that a special camera mounted near the panel could photograph the instruments. The wing tips were painted with black and

British Tall Boy and Grand Slam earthquake bombs, dropped by the famous "Dam Busters," 617 Squadron of the Royal Air Force, were the largest conventional bombs used during World War II . . . A Grand Slam bomb with tail fin installed is hoisted from the bomb dump.



yellow strips of known width which could be photographed and the wing deflection computed. The instrumentation work was accomplished at Muroc AFB.¹⁴

In addition to the modification of the B-29, a special bomb lift had to be built to handle the 44,000-lb missile. The Boeing Company designed a 50,000-lb lift that would hoist a 25-ton bomb 12½ feet in the air, roll it 360 degrees in either direction, shift it 4 inches either side of center and 10 inches fore or aft, and tilt it 6 degrees up or down. One man operating six levers could load one of the bombs into an aircraft.¹⁵

Squadron C, 608th AAF Base Unit, Chemical & Ordnance Test Group, stationed at Muroc, was selected to drop the first T12.¹⁶ Preparations for the drop continued throughout the fall of 1947 and early 1948. After modification, the Superfortress and its crew were sent to Eglin AFB, Florida, for special training. Air Force and Ordnance experts refused to speculate on what might happen to the B-29 when it suddenly became 22 tons lighter after the bomb was dropped.

The Superfort reached Muroc in December, and the 50,000-lb lift arrived the following month. A series of minor problems then delayed the actual drop for some time. The lift had been damaged en route to California and had to be repaired. Squadron C armament personnel had to be trained to operate it. A pit had to be dug to get the bomb and lift under the B-29. After money problems for digging the pit had been solved and the earth excavated, a heavy rainfall filled it with water and delayed pouring of the concrete. The same rain also saturated the Muroc Dry Lake from which the aircraft would have to take off, and it was feared that the program might be further delayed. Several days were devoted to loading the bomb into the plane and to static drop tests. It was also necessary to load the bomb into the Superfort, weigh it, and find the center of gravity before the first take-off could be made. A crew of weight and balance experts from the Sacramento Air Depot were called in to assist in that function. But in spite of these little difficulties, everything was ready for the big event by early March.¹⁷

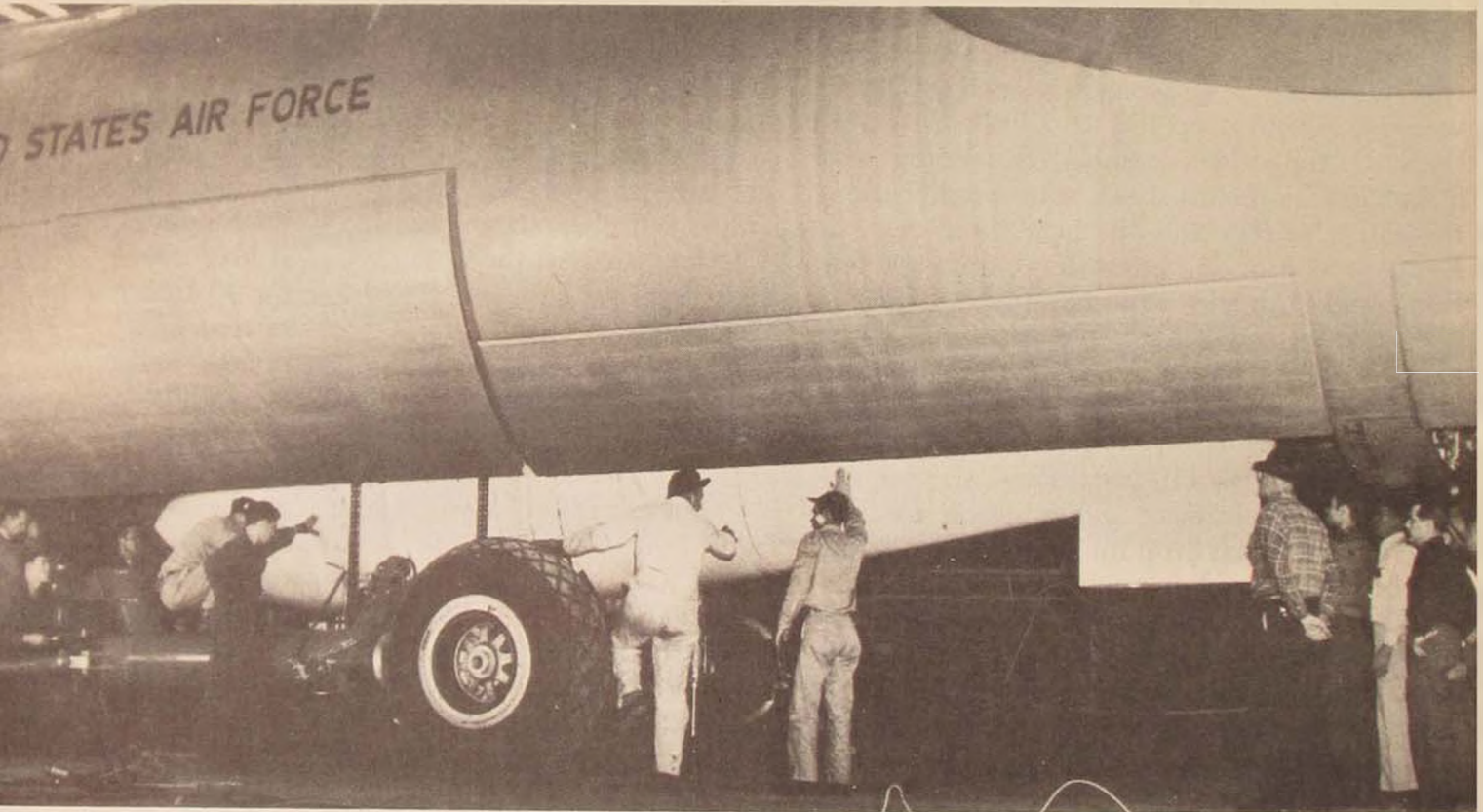
Just before noon on 5 March 1948, the bomb was released from B-29 No. 2263, piloted by Captain William A. Looney. The Group historian recorded the event in these words, "On this date the heaviest bomb the world has ever known, weighing 43,755-lbs was dropped from a B-29 aircraft from an altitude of 25,000 feet. The entire mission was highly successful and the bombing results were excellent."¹⁸ By 19 April 1948 the personnel of Squadron C and B-29 No. 2263 were veterans, having dropped six of the extra-super blockbusters.¹⁹ Their part in the operation was completed.

The use of a B-36 to drop the bomb after it had already been dropped by the much smaller B-29 would almost have been an anticlimax except for one thing: the B-36 dropped two of them on the same mission. On 29 January 1949 at Fort Worth, Texas, Consolidated Vultee B-36 No. 43, piloted by Major Stephen P. Dillon, carried the greatest bomb load ever lifted to that date into the sky—over 43 tons. The weight lifted was equivalent to that of a B-17 Flying Fortress. Including bombs and fuel, the B-36 grossed over 300,000 pounds—not startling in terms of today's behemoths, but in 1949 it was a whopping amount.²⁰

The two bombs were flown by the B-36 from Fort Worth to the bombing range at Muroc AFB, where the first bomb was released at 35,000 feet. Then Dillon took the plane to 40,000 feet, where the second one was dropped. The B-36 made the round trip nonstop, a flight of about 2900 miles. The official announcement proclaimed it "a normal test flight."²¹

All these T12 bombs dropped were unarmed. Eventually the bomb was exploded, but the details have not yet been released. The results of the first explosive-filled 22,000-lb Grand Slam dropped by the British produced a crater 30 feet deep and 124 feet in diameter. It is readily evident that the 44,000-lb T12 could produce a sizable earthquake.²²

One advantage of the T12 over an atomic bomb is obvious: If the military situation called for heavy blasting of large areas through which our men would eventually have to advance, the 44,000-lb bomb could be used without having to worry about radiation contamination from an exploded A-bomb. The Air Force has also

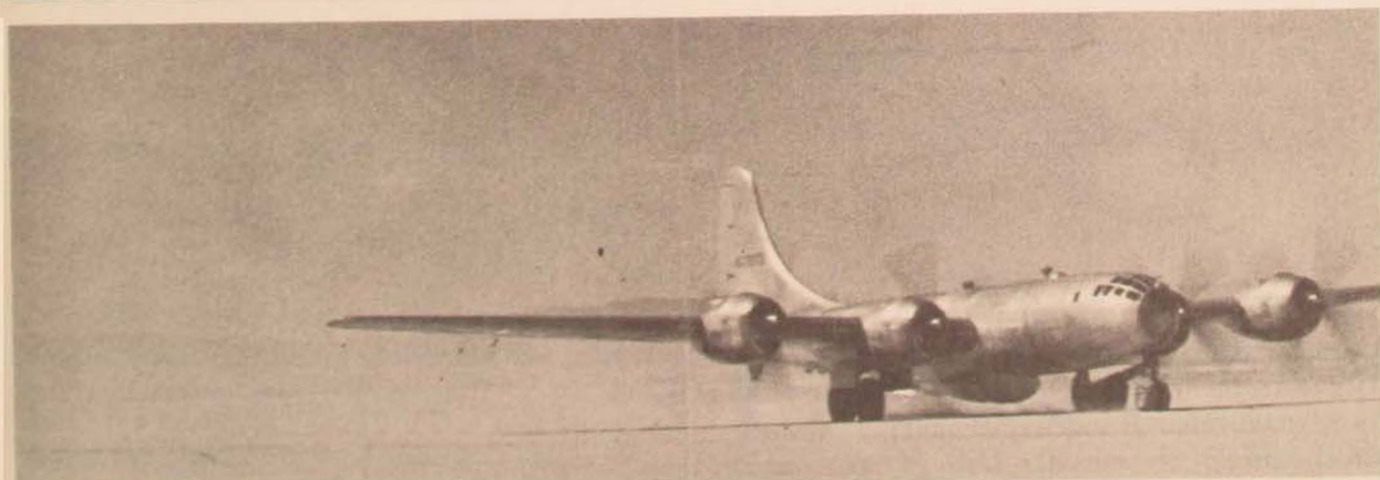
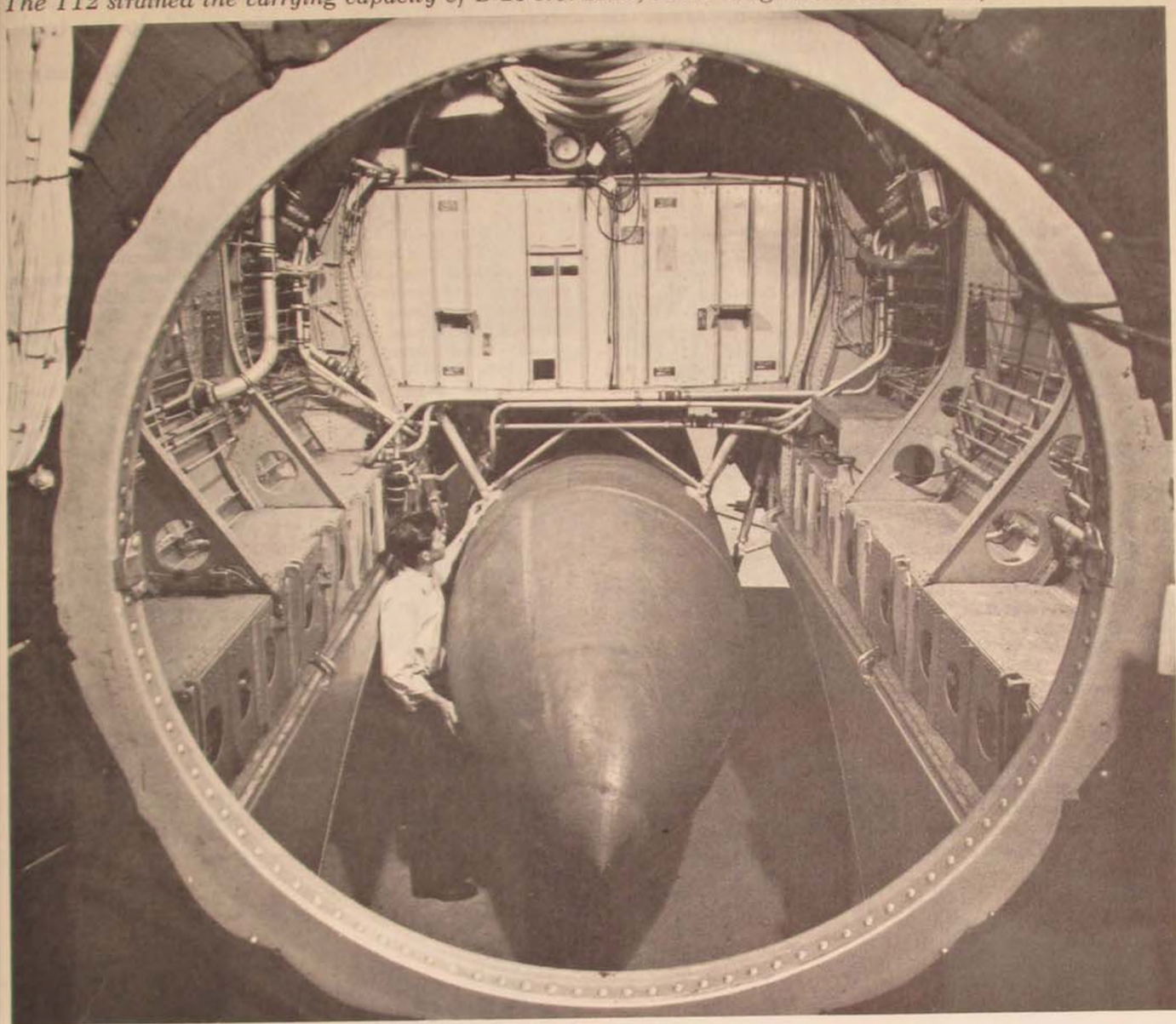


Testing the T12 Bomb

A pit was built in order to load T12 bombs onto the B-29. . . . A 44,000-lb T12 tests the capacity of the hydraulic bomb lift designed by Boeing. . . . Two of the unarmed extra-super blockbusters were hoisted onto a B-36 for the test drop at Muroc AFB, California, 29 January 1949. . . . A secured T12 protrudes from the bomb bay of modified B-29 No. 2263.



The T12 strained the carrying capacity of B-29 No. 2263, even though it had been modified.



recognized its possibilities in creating cave-ins and earth shock and in getting at important underground installations. Dropping a string of the extra-super blockbusters in areas of known Viet Cong subterranean strongholds

might just force them to give up such positions, bringing the enemy to the surface and into the open where more conventional and less expensive methods and weapons could do the trick.

Hattiesburg, Mississippi

Notes

1. AF press release, 10 March 1948. The press release called it a 21-ton bomb, but it weighed 43,755 pounds.
2. Constance McLaughlin Green, Harry C. Thomson, and Peter C. Roots, *The Ordnance Department: Planning Munitions for War*, a volume in the *U.S. Army in World War II, The Technical Services series* (Washington: Government Printing Office, 1955), p. 451.
3. AF press release, 10 March 1948; Paul Brickhill, *The Dam Busters* (London: Evans Bros., Ltd., 1951), p. 31.
4. Major J. A. Swaney, "Record of Army Ordnance Research and Development, Bomb Development," p. 370; Wesley Frank Craven and James Lea Cate (eds.), *The Army Air Forces in World War II* (7 vols.; Chicago: University of Chicago Press, 1948-1958), VI, 245.
5. Swaney, "Bomb Development," p. 370; R. J. Kastenholtz, A. O. Smith Corp. to Chief of Ordnance, Attn: Col. C. H. M. Roberts, 8 June 1949, AF Historical Division, Archives, Maxwell AFB, Alabama.
6. Clipping from *Milwaukee Journal*, 12 October 1945; memorandum from Col. C. H. M. Roberts to the Secretary, Ordnance Technical Committee, 13 May 1949.
7. Brickhill, p. 31 *et passim*. In 1963 Dr. Wallis explained the details of the weapon and the strategy employed in its use in an unpublished article entitled "The 'Dam Busting' Weapon." A copy of this study was provided the author by Vickers-Armstrongs (Aircraft) Ltd.
8. Green, *et al.*, pp. 470-71.
9. Charles Webster and Noble Frankland, *The Strategic Air Offensive Against Germany* (4 vols.; London: Her Majesty's Stationery Office, 1961), I, 183, II, 294, III, 181, 204n3.
10. Brickhill, pp. 249-52.
11. Webster and Frankland, III, 203-4.
12. Swaney, p. 370; Green, *et al.*, pp. 454, 471.
13. The Fat Man, the plutonium-type atomic bomb, was exploded over Nagasaki. It was 128 inches long, 60 inches in diameter, and weighed 10,000 pounds. The Little Boy, the uranium-type atomic bomb, was released over Hiroshima. It was 120 inches long, 28 inches in diameter, and weighed 9000 pounds. Gene Gurney, *The Man in the Air* (New York: Crown Pub., Inc., 1962), p. 330.
14. AF press release, 10 March 1948; Unit History, Squadron C, 608th AF Base Unit, Muroc AFB, California, semiannual summary, March 1948, file 240.07608, AF Archives.
15. AF press release, 10 March 1948; *Boeing Plane Talk*, No. 15, 5 August 1949.
16. History, Squadron C, July 1947.
17. History, Squadron C, December 1947, January-March 1948.
18. Historical Record, 608th AFBU, Phillips Field, Aberdeen Proving Ground, Maryland, 1 January-30 June 1948, p. 15.
19. The bombs were dropped on 5, 10, 12, 18, and 22 March and 19 April 1948. History, Squadron C, March and April 1948.
20. *Washington Post*, 30 January 1949.
21. *Ibid.*
22. Webster and Frankland, III, 203-4.

Acknowledgment:

Illustrations accompanying this article are used with kind permission of the Imperial War Museum (London), Vickers-Armstrongs (Aircraft) Ltd, Boeing Company, General Dynamics, and the United States Air Force.



De GAULLE:
ENIGMA IN THE WESTERN
ALLIANCE?

MAJOR ALFRED H. UHALT, JR.

I represent a party which does not yet exist; the party of revolution, civilization. This party will make the twentieth century. There will issue from it first the United States of Europe. . . .

—Victor Hugo

GENERAL Charles André Joseph Marie de Gaulle is president of the Fifth French Republic. It may even be accurate to say that Charles de Gaulle is the Fifth French Republic. His dominant person-

ality and powerful leadership have brought much stability to a historically chaotic political arena. Out of the inadequacies and failures of past parliamentary democracies has come an innovation in French government brought about largely by the pre-eminence and uniqueness of De Gaulle himself. He has brought unprecedented power, prestige, and dynamic leadership to the previously weak and ineffectual position of the French presidency. Under his hand, France has prospered and is gaining a dominant position in Europe. So well has "Gaullism" shown itself a unifying, directing force on the French political stage that it will undoubtedly remain long after the General has passed from the scene.

With the emergence of Gaullist France as a strong political and military power, an era appears to be coming to an end in Western Europe—an era in which the United States has played the leading role in European defense and political direction. In the era now opening, the nations of Western Europe are becoming more and more aligned with each other in terms of European self-interests. Great Britain has moved to enter the European Economic Community and strengthen its ties with the Continent. The Russians are wooing the Italians both politically and economically, with some noticeable results. Turkey and Portugal have both recently recoiled from U.S. influence, Turkey moving toward closer ties with the Arab nations. To the north, Denmark and Norway show signs of wavering in their commitments to the North Atlantic Treaty Organization. Even West Germany, still publicly holding very close to the United States, is beginning to talk "unofficially" with the Communist rulers of East Germany.

Thus, while certainly not alone in deciding the time has come to change course, France has made the most dramatic break to date. On 14 January 1963 President de Gaulle flatly rejected the United States' plan for a NATO combined nuclear force, restated

France's intention of developing her own independent *force de frappe*, and indicated France's intention to withdraw from the integrated NATO military establishment by 1969. He has since strengthened his position, with the result that foreign NATO forces are currently leaving his country.

In general, the United States feels let down if not virtually betrayed by the French action. Americans cannot understand this reaction to what they consider their freely offered helping and guiding hands, under which the French nation has recovered from the ravages of war and grown to her present stature and position in the world community. In the last half century, Americans feel, the United States has done more for France and the French people than any nation in history has ever done for another. Twice in this time when Europe vividly demonstrated that it could not handle its own affairs, America rescued her old-world allies from major war and then underwrote the rebuilding of a devastated Europe, including France. Following World War II, when the threat of Communist aggression hung heavy over the West, the United States provided the military bulwark behind which France and the rest of Europe rebuilt with Marshall Plan and other aid from the United States.

Now we are witnessing the payoff, and for the United States and the Western Alliance it is not a pleasant prospect. Under President de Gaulle, France is moving with a strong bid to replace the United States as the keystone of the European defensive alliance. De Gaulle makes no pretense of his aim to recoup for France the "grandeur" of days gone by. To accomplish this purpose and restore France to a position of world leadership, De Gaulle has consistently sought to undermine and downgrade the position of the United States in both European and world affairs. By and large the American people have not been very favorably impressed with this response to the immense investment in lives and money they have made in France and all of Europe over the years.

To save the European allies from defeat in World War I cost the United States 36,000

This article is an expansion of a research paper prepared by Major Uhalt as part of his academic work at the Air Command and Staff College, Class of 1966.

lives and 224,000 wounded. France received \$27 billion in direct military aid and \$12.2 billion in loans (of which she still owes \$6.7 billion and shows no inclination to pay). To wrest a defeated France from the Axis powers in World War II, the American people sacrificed 184,000 lives and 479,000 wounded. To bail Europe out of her second political breakdown in less than a quarter century, the American taxpayer paid \$250 billion and then proceeded to pour \$11 billion more directly into France in Marshall Plan aid and direct grants (\$4 billion). In addition to direct financial aid, the United States provided large military forces in Europe through the postwar years to insure against a new military attack from the east while Europe, including France, rebuilt without having to bear the heavy burden of defense. These troops also had the secondary effect of providing additional dollars to the European economy. To further assist in the economic rebirth of Europe, the United States government during this period encouraged an outflow of gold to Europe, thus helping her European friends regain financial liquidity and soundness in their own currencies. This action has resulted in severe gold flow problems for the United States in later years.

Cynics retort that this support was in the self-interest of the United States and not really for the benefit of the receiver nation. In retrospect, however, one need only point out the unprecedented nature of the action, even including restoration of the vanquished by the victor. To restate an oft-quoted phrase, "No man is an island." What affects one nation affects another. While there may be some degree of truth in the cynical proposition, the undeniable fact remains: America was needed; history records that she responded willingly, wholeheartedly, and "in spades."

For this, Americans asked nothing in return except a proclivity among the people of Western Europe to cooperate in building a unified defensive force that in the future could do more to protect itself. For a while, the outlook was good; but now, largely due to the actions of General de Gaulle, the defensive structure of the Western Alliance is badly split, and with just another small push

the whole thing will certainly come tumbling down.

Why has France moved in this direction? To most Americans and even many Frenchmen (e.g., General Salan), De Gaulle's military policy, if not also his economic and social policies, has appeared an inconsistent paradox to say the least. On the one hand France has abandoned Indochina (Vietnam), withdrawn from Algeria, and virtually eliminated the elite Foreign Legion as an effective fighting force, while on the other hand she has built an impressive modern army backed by over one million reservists on 24-hour call, a modern air force boasting both supersonic fighters and supersonic bombers capable of delivering impressive self-developed nuclear weapons, and her own nuclear-tipped 2000-mile intermediate-range ballistic missile. In 1965 she demonstrated to the world the efficacy of this missile by using it to boost the first all-French satellite into orbit. Further, France intends to equip her navy with French-built, missile-launching, nuclear-powered submarines, also capable of delivering her nuclear punch.

What is the purpose behind this extensive and expensive buildup of French military might, apparently redundant with United States weaponry candidly offered in good faith in defense of the free world? What is General de Gaulle's "grand design" about which Washington is having such misgivings? Why has France appeared the stumbling block in the path of NATO military integration and European political and economic unity? De Gaulle has often been accused of deliberate disruption of the drive toward Atlantic cooperation and European unity in order to foster the dominance of France. He has been accused of having delusions of grandeur and has even been called "Charlemagne II." Why? Let us try, as best we can, to view the French position as a Gaullist might.

the world from Paris

There may be a mystical streak in Charles de Gaulle, but there is really little mystery in his policy. Ever since returning to power eight years ago, he has been trying to drive the

same point home to Washington: France *must* share in the big decisions. Rebuffed by Roosevelt and Churchill during World War II, he proposed to his old comrade-in-arms, President Eisenhower, the establishment of a triumvirate, the United States, Britain, and France, which would more or less run the affairs of the Western world and manage the cold war. That proposal was met initially with silence; then, somewhat later, with a flat "No." When De Gaulle asked to share in the Anglo-American atomic arsenal, the answer was the same. For a brief time it appeared that President Kennedy might take a different tack, but White House advisers decided that, after all, France was a "negligible quantity" and it was sheer arrogance for De Gaulle to demand equal status with the all-powerful United States. The proposal for a multilateral force, conceived in the Kennedy era, was considered by Paris as having only one objective: the integration of France in an Atlantic community and the strengthening of U.S. hegemony.

When Lyndon Johnson assumed the Presidency, De Gaulle put out a few feelers, but there was no change in the reaction from Washington. De Gaulle finally grew impatient and shifted his tactics: he acted so that Washington simply could *not* ignore him. Perhaps in a bit of French pique, he engaged in "nuisance diplomacy." This was the period of bitter recriminations and harsh statements about American policy. It was the time of De Gaulle's unprecedented tour of South America, of French anti-American initiatives in the United Nations, and of France's recognition of Communist China. President Johnson remained unimpressed.

The French insist that the United States has either ignored or misunderstood what De Gaulle is trying to do—jolt Britain and the United States out of their euphoric vision of a quickly carpentered "new Europe," which, as André Malraux has said, "will not be made merely by singing songs." Action is needed, and De Gaulle's attitude is based on his vision of what Europe *must* be by 1980 or 1990. He sees five long processes evolving:

- the changing nature of government in the United States

- the changing relationship of the United States to Europe
- the changing nature of the Soviet Union
- the growing threat from China
- the new emergence of Europe.

Too long, he insists, the policy of the Western democracies has been that of response. Indeed, President Johnson has repeatedly referred to U.S. world military policy as one of "measured response." An impasse has been reached, De Gaulle feels, and it is time to discard a governmental strategy that is both bad and obsolete. France must seize the initiative and capitalize on these five "obvious" world factors, to lead Europe in creating a new, dynamic, and forward-looking government, oriented to the modern world, substituting it for the obsolete ideologies of U.S. responsive democracy and Soviet atheistic materialism.

the United States and Europe

The first two of these factors, as France sees them, must be examined together. They are inexorably intermeshed and involve both military and political considerations.

Western military structure. De Gaulle's central military concept is simply this: In an age of nuclear power and in a world made up of sovereign nation-states where no real world-state exists, every individual nation with an important stake in the world situation must be unilaterally strong, able to fight at least a limited war with limited objectives, and, if unable to defend world interests in general hostilities, at the very least be able to defend herself *effectively* in the event of general war, as well as join in the common offensive against the enemy. This nation must be free and able to use all its skill, power, fortitude, and know-how as *it* sees fit without being subject to nuclear blackmail. This freedom of choice in the international amphitheater is what Mortimer Adler calls "external sovereignty," i.e., freedom of a nation to risk nuclear war by fighting or threatening to fight a conventional war and, in so doing, forcing the option of escalation or de-escalation upon the enemy,

as President Kennedy did in the Cuban missile crisis.

General de Gaulle contends that this position of independent national strength contributes even more materially to the overall deterrent posture of the Western allies than NATO at its best, in that the Communists not only must concern themselves with Western collective interests but also must be even more sure not to tread on any individual toes lest they touch off a world nuclear holocaust. Obviously then, says De Gaulle, any nation such as France that wants to be both free and influential in this world of sovereign states must have a nuclear-capable striking force of its own, for only thus can such a nation use its military power to political advantage by being able to fight or threaten to fight, deploy force in its own interest, or shoot or be shot at without undue risk of nuclear destruction at the hands of the enemy. Thus, rather than look to NATO, France is leaning heavily on her own developing *force de frappe*, to include a truly modern army, navy, supersonic air force, and both silo-based and submarine-launched missiles, all combat-ready and nuclear equipped by 1970. Rather than *divide* Europe, De Gaulle feels he can provide a first line of strengthened defense for a *unified* Europe (at least militarily for now) under a European, French-led protective nuclear umbrella.

No one pretends that France's nuclear deterrent will ever be anything but small, yet it would add heavily to the price the Russians would have to pay for any aggression in Europe which an American politically minded administration did not consider immediately menacing to the United States itself. "Suppose," said a French minister in 1963, "the Hungarians had had only three atomic bombs during the 1956 uprising. Do you think the Russians would have behaved the way they did? I don't." And neither does Charles de Gaulle.

Grandeur and the new view of government. Some accuse the French President of having dreams of *grandeur*—a word so hateful to the American democratic soul that no reporter or commentator on this side of the

Atlantic is able to mention it without sarcasm. What the American forgets is that, although Charles de Gaulle is a politician as chief of his party and president of the French Republic, he is nevertheless a military man through and through, and his every action and every utterance must be viewed and understood with respect to his concepts of military power and its employment in affairs of state.

De Gaulle sees himself as the central and principal actor in the new European political structure he is trying to mold. He objects to unlimited parliamentary debate prior to action in international affairs, viewing it as incompatible with his concept of a "new government of the future." He does not think of this government as a dictatorship but rather as a new form of democracy to which France (and eventually all of Europe) must come in order to survive in a nuclear age. The essence of this concept is that the international situation now demands dynamic leaders with full authority to commit the nation and thus make its position, policy, and military capability credible at the summit.

The General thinks, for example, that it is precisely the citizen's unwillingness to incur the risk of war that places the military system and policy of an old-line democracy in the hands of its politicians and so prevents it from achieving credibility in a time of crisis. Only when war is the inevitable alternative, only when the issue is narrowed to a stark "Yield or perish!" situation will the citizens of such a state make the act of sacrifice upon which diplomatic credibility and international adequacy depend. *But by this time, in a nuclear age, it is already too late:* peace is dead and diplomacy is wringing her hands over the corpse of civilization.

In De Gaulle's view, there is a basic truth which the democracy of the future must take into consideration if it is to survive: in an age of total nuclear destructive capability, a clearly defined opposition exists between politics on the one hand and diplomacy with its hand-made strategy on the other. For politics (the partisan politics of a democracy) has formed the habit of being primarily concerned—all too often to the exclusion of everything else

—with *domestic headship*, which means winning votes that might otherwise be attracted to the more soothing platform of the opponent. And winning votes amidst the unending international crises of our time means taking into account *not* the enemy's preparations, manifest intentions, and opportunities but primarily the voters' fear of war and the risk of escalation, which induces a "security complex" utterly opposed to the steely mental makeup that is fast becoming as indispensable to successful statesmanship as it is to military victory.

In his most famous book, *Vers L'Armée de Métier (The Army of the Future)*, written in 1934, De Gaulle points out that immediately after the battle of Sadowa in 1866 France should have positioned her armies along the Rhine but did not do so. "With how much blood and tears," he observes, "did we pay for this error of the Second Empire!" To confront Prussia with such a *fait accompli* would have required calling up the reserves. At the time, this was politically unpopular, even though called for by the French General Staff as essential to the defense of France. In retrospect, such a move in 1866 might well have prevented the wars of 1870, 1914, and 1939. A century later, in a world armed with weapons of mass annihilation, De Gaulle sees even more incipient tragedy in the inability of a democracy to formulate and execute a swift and timely strategic decision.

The small war that aborts the great war, the small threat that averts the great threat, the small risk that presents the enemy with a greater risk than he is willing to take—all these have one single ineluctable requirement in common: to be effective, they must be *in time*. And unfortunately, the capacity for strategic timing—the timing of a war or threat or risk that strikes the enemy like a bolt of lightning from an apparently cloudless sky—has not hitherto been an outstanding attribute of the parliamentarian.

So *democracy*, thinks the French President, is now faced with the necessity of taking a more intelligent view of a type of man that for the last fifty years has been the "whipping boy" of politicians in time of peace but the

national idol of millions when he forges to the front during a war—a war which he feels could have been averted had the politicians listened to him in time of peace. This man is the strategist in politics, the *politico-strategist*, the man who can take his well-calculated risks and submit himself and his policies to the heaving billows of time and circumstance precisely because he is aware of the situation "on the other side of the hill"—the same situation which the mere politician, adept at partisan politics with his eye on the ballot box and his hand on the voter's pulse, refuses to admit even to himself, much less to his constituents.

In any event, after his long observation (often first-hand) and studied analysis of war in its relationship to free men and democracy (particularly the French democracy), Charles de Gaulle seems to have learned his lesson well. It is essentially a lesson in the proper use of might and power (Clausewitz's "continuation of politics by other means") in pursuit of the utmost goal of the modern Western democracies: peace—but peace with honor, integrity, security, opportunity, and, above all, freedom.

The myth of military alliance. So now we may understand, if not appreciate, De Gaulle's idea of *grandeur* or, more properly put, his concept of direct personal power as the head of state of a modern, powerful, and influential nation in a dynamically moving and rapidly changing world. While some may not approve of such immense power at the virtual beck of the French president, there is nothing in this particular kind of government, per se, that would cast impedimenta along the path of international cooperation. Why then have we found it so increasingly difficult to work with France in moving toward the common goals sought by all free men?

Why indeed? Perhaps we had best look away from the Tricolor to find the answer to this question. If we remember how France has been denied both nuclear secrets and nuclear weapons by the United States and Great Britain, then we will have the key to understanding of De Gaulle's conduct toward the United States and Great Britain as well as

toward NATO and the United Nations. General de Gaulle sees one point absolutely crystal clear: only by possession of effective nuclear power today, and *not* by negotiations or alliances, can a sovereign nation avoid nuclear limbo—that is, be free to use power in a world where only power counts.

While many will deny it and counter with voluminous and vehement testimony as to the worth of the Western Alliance and NATO, the truth is that we have never really learned the lesson so vividly displayed by the Cuban missile crisis of October 1962. But De Gaulle has learned it. It has confirmed his stated position, and he is moving to take advantage of the knowledge thus gained as rapidly as he can. In that crisis situation, two observations were outstanding: First, there was no prior consultation by the U.S. with allies, with NATO, or with the U.N. To such an extent was this true and obvious to the world that a member of the British House of Commons lamented publicly that the United States had threatened England with “annihilation without representation!” Second, without any publicly stated overt threat to use our nuclear military power (which was never explicitly brought into the picture), we were able to get our way simply and solely by the use (the blockade) and the threat (the airborne divisions poised for invasion of Cuba) of conventional power. All this, of course, operated under the *implied* threat of our nuclear arsenal directed at the Soviet Union—as, in fact, do our conventional operations in Vietnam today.

As General de Gaulle saw it, all this ponderous international machinery represented by NATO and the U.N. was regarded as useless by the United States in the grave Cuban missile crisis. Thus the French President’s position was confirmed: International diplomatic ragtag and outmoded encumbering machinery was and would continue to be useless in any real crisis. It did not take him long to see in dynamic action that, the world being what it is today, the only thing useful in a military crisis is unilateral power absolutely at the disposal of the unfettered, uninhibited national sovereignty concerned. Moreover, this conclusion has a corollary, also graphically demon-

strated by the missile crisis: The use of or the threat to use unilateral conventional power as a tool of international diplomatic persuasion was credible and possible without undue risk of nuclear retaliation *only* if the sovereign nation concerned possessed a nuclear umbrella; that is to say, a nuclear force absolutely at its own disposal and at the disposal of no other nation or group of nations.

Thus, if consultation is out (as it certainly was during the Cuban crisis), then there is no sense in having allies who must be consulted prior to any power act or power threat. The course for a strong nation to take, then, is to rid itself of all encumbering military alliances and get hold of some real nuclear power, free of any strings, so that the nation can effectively employ its own power in its own interest as it sees fit.

The Cuban crisis did not move De Gaulle to this position and conclusion; it only confirmed the position he had adopted and proclaimed to his countrymen and the world years before. In the 1930’s, he warned that France’s static military concept based on the defensive Maginot Line policy was basically unsound from both a military and a diplomatic point of view. He urged the French government to adopt a mobile and offensive strategy based on tanks, but it was only the high command of the Third Reich that heeded his advice. He foresaw that a nation geared to defensive armaments was incapable of carrying out a diplomatic offensive against a potential aggressor, and the Anglo-French diplomatic surrender to Hitler and Mussolini at Munich only confirmed the same position he still advocates today.

Many Americans maintain that France “owes” the Western Alliance her unflinching allegiance. Based on a centuries-old moral bond, cemented in this century by two World Wars, it is obvious that her allies will always come to her aid. General de Gaulle has some reason to doubt this. In France’s three postwar military crises, Indochina, Suez, and Algeria, where were her allies? Being a member of NATO and the U.N. did not help France in any of these crucial hours when her own vital interests were at stake (nor did it help Por-

tugal in Goa and Damão). In fact, at Suez France's strongest partner in NATO opposed her and deliberately undermined her position. A lot of "moral debt" was wiped from the slate by that debacle.

Thus, says Charles de Gaulle, NATO is dead and it was the United States as much as or more than any other that killed it. All that remains is to bury it with honor before it rots. If the "total commitment" of the United States government to defend Europe as it would "Main Street U.S.A." ever really existed, it exists no longer. However politely the realities may be disguised, the deterrent strength of NATO is based, in the last analysis, on U.S. nuclear power, over which the American President exercises absolute control; and thus he exercises a *de facto* hegemony over Western Europe, including France. De Gaulle feels it intolerable that the countries of Western Europe should have to entrust the decision of their national survival to a foreign ruler in a distant land. Whatever the protestations of successive U.S. Presidents that the defense of Europe is essential to the survival of America, De Gaulle maintains that no one can predict absolutely that the United States will act in the best interest of Europe. In fact, her propensity *not* to do so has already been repeatedly demonstrated. Thus, Europe cannot afford to depend upon the United States in this dynamically changing world and in time of crisis stand by while the American body politic debates whether or not any new escalation in the world situation warrants U.S. action. If action is in the best interest of France, France must be free and able to act. As the only solution to this situation, De Gaulle returns to his main theme: Europe must have its own nuclear deterrent, and as part of this eventual European deterrent France must have her own nuclear force, over which she has complete control. Since nuclear weapons are the ultimate armament in the modern world, De Gaulle contends that French diplomacy can speak meaningfully in world affairs only if it is backed by a French nuclear force. As long as a country does not have national military independence, it cannot be said to have national political inde-

pendence, and without political independence national prestige and ambitions for influence among the world community of nations are only pipe dreams.

the Soviet Union and Communist China

The third and fourth points underlying Gaullist philosophy are France's belief in the changing nature of the Soviet Union and the growing threat from Communist China. While still a threat to Europe, Russia is no longer the hulking, ponderous menace, waiting only for the opportunity to spring, that she once was. "Perhaps," says Couve de Murville, "the day will come when the evolution of the Soviet Union is sufficient for it to dispense with the idea of conquest of the world. Then it might be possible to establish conditions for a lasting peace."

In this benign vision there is a great deal of André Malraux. Malraux, a close adviser to President de Gaulle and a world-renowned expert on China, believes the real threat to the world now lies not in Moscow but in Peking. He believes that Communist China is at the moment a faltering giant. When the giant stops stumbling around amidst its own misdirected egomania and rises up as a nuclear-powered nation of one billion people, then despite any efforts of the West the Communist Chinese will certainly dominate, if not physically overrun, all of Southeast Asia and possibly even the Indian subcontinent. For this reason De Gaulle feels that further action in Vietnam is senseless and a useless waste of resources that could be better applied elsewhere. If this De Gaulle-Malraux view of the future should prove correct, the Russian regime will undoubtedly be forced to associate itself with the West as the lesser of two evils, much as she did when her late ally Nazi Germany turned against her in 1941.

the new Europe

Here, then, in De Gaulle's view of future world alignments, lie the roots of the fifth and final factor of his philosophy, embodied in his oft-quoted but much-misunderstood refer-

ence to a united Europe reaching all the way from the Atlantic to the Urals.

Americans have condemned the French President for his recognition of and association and trade with the Communist nations. On 20 June 1966 he traveled to Moscow, a gesture itself indicating he no longer considers the Soviet Union to be a real threat to the security of today's strengthened Western Europe. There is talk of the renewal of the wartime Franco-Soviet alliance, much to the displeasure of Washington. Such a move would further undermine NATO and effectively isolate Germany—but it is another step toward De Gaulle's vision of a Europe extending from the Atlantic to the Urals.

De Gaulle realizes this new European community will not be created in the next few years or even during his lifetime, but if the Soviet bloc in Europe can be pulled by the West while being pushed by China, he feels that the European politico-ideological conflict can be made to disappear and a united Europe would then make sense. The present French president would no longer be around, of course, but it is completely in character and in keeping with his consuming sense of history that Charles de Gaulle should now be thinking and acting audaciously on behalf of the country he loves and for a *new* Europe which cannot possibly emerge until he has been years in his grave—if ever.

And so France is rushing headlong toward military and political autonomy, holding aloft her great vision of leading Europe into a new unity. At the helm is President Charles de Gaulle, whose commanding personality has been alternately admired and detested for his single-minded determination in pursuing goals that sometimes coincided but more often collided with the policies of his partners in the West. Yet, however much one might

disagree with *le grand Charles'* vision of the future, one would be ill-advised to disregard it, since for almost four decades his views have so often proved prophetically correct.

From the Maginot Line to the DEW Line, Charles de Gaulle has proclaimed his message consistently and loudly. Should his words seem strange, his logic is sound: "If America wants Europe to be a partner, she must let it be itself and not what she chooses to make it."

ON 20 MAY 1966 the following press release appeared on the world's news wires:

LONDON (AP)—A new idea for modernizing the North Atlantic Treaty Organization was reported under official study Friday. It would allow the Atlantic Alliance to work ultimately with the Soviet Union if Red China emerges as the world's third superpower.

"In reorganizing NATO we should concentrate less on keeping it as a purely defensive organization to meet military threats," said an authoritative British source. "We should see it more as an organization of Western nations that could negotiate from strength with the aim of arriving at some common ground with Russia about attitudes to the world of the 1980's and 1990's when we might have to contend with a third superpower."

The informant, who made plain he was thinking of Communist China as the third superpower, said this idea is under consideration by various allied officials concerned with plans for streamlining NATO.

There are two sides to any coin. Perhaps the world has just turned up the side that bears the Cross of Lorraine.

Cam Ranh AB, RVN

NATO NUCLEAR ARRANGEMENTS IN THE AFTERMATH OF MLF

Perspectives on a Continuing Dilemma

FIRST LIEUTENANT JOHN B. KOTCH

MOST significant among recent articles to appear in the *Air University Review* on the subject of NATO nuclear arrangements is the timely and enlightening examination, "Nuclear Forces and the Future of NATO," by Brigadier General E. Vandevanter, Jr., USAF (Ret), in the July-August 1964 issue. At that time the American-sponsored multilateral nuclear force (MLF) was uppermost in the minds of most policy-makers on both sides of the Atlantic. Now, more than two years later, the virtual abandonment of the MLF as a workable scheme,¹ while representing an unfortunate setback for those who viewed it as a vital part of the *Grand Design* effort to broaden and strengthen European and Atlantic politico-military institutions, has not measurably altered the urgent concern which policy-makers continue to voice with respect to future NATO nuclear arrangements. On the contrary, the United States today faces the most serious and far-reaching crisis in NATO affairs since the organization's inception in 1949. At stake are future European and Atlantic security arrangements centering around NATO nuclear arrangements.

In these circumstances, while a pressing need exists to formulate new policy alternatives, constraints similar to those imposed on the MLF are likely to impinge upon future policy initiatives and thus narrow the area of choice. These constraints would include, most importantly, the continuing requirement for unity of command and control and for the nonproliferation of strategic operational hardware among NATO members. The purpose of this article is to explore possible avenues of accommodation between the alliance's chief protagonists in the light of existing policy constraints, by engaging in a renewed airing of the potentially divisive domain of shared strategic decision-making when viewed from a NATO perspective. In approaching this subject I share the conviction of most serious scholars of NATO affairs that only an accurate, balanced, and objective assessment of existing politico-military conditions can insure that potential areas of common agreement are fully, forcefully, and fruitfully explored.

Broadly speaking, shared strategic decision-making encompasses decision-making relative to the deployment of strategic weapon systems, development of targeting and attack plans, and finally some form of viable mechanism for the execution of such plans (to include go/no-go type of decisions). That we are at present very far from such a state of affairs within the Atlantic alliance need not deter

Author's Note: The first draft of this article preceded by several months the French withdrawal from NATO's integrated military command. This unanticipated and highly regrettable action has, in my view, made the arguments contained herein more rather than less valid.

us from a consideration of the possible benefits to be derived from future movement in this direction. Viewed in this context, the burden of this article is, in effect, to make a case for the feasibility and desirability of replacing the current European sense of underparticipation in strategic planning and decision-making with a sense of positive and meaningful contribution. It should be clear that, unless we can demonstrate convincingly to our NATO allies a continued determination to move forward in exploring new ways and means of achieving a more equitable distribution of strategic decision-making responsibilities, we run the increased risk of further weakening the entire integrated NATO command structure. Substantively, it is argued that shared strategic planning on a multinational basis within the framework of the Special Committee of NATO Defense Ministers, together with close coordination of strategic operational forces among those NATO members now possessing them (the British and French in addition to the U.S.), offers at present the best available method for expanding and deepening allied participation in strategic decision-making.²

Finally, in our inquiry we must consider the nature of the existing military hardware underlying the political and strategic dimensions of nuclear deterrence. Today the mainstay of Western strategic nuclear deterrence,³ approximately 96 percent of the Free World's total megatonnage,⁴ is provided by the U.S. nuclear forces. Clearly, a shared strategic decision-making environment would vitally affect the mission of the Strategic Air Command, and any future modification in NATO nuclear arrangements must be approached in the light of SAC's overall effectiveness to date.

Political and Strategic Realities

the multilateral nuclear force

The MLF provides us with the most useful point of departure in our review in depth of NATO nuclear arrangements. Briefly, the MLF scheme for a nuclear-armed, mixed-manned,

and collectively owned surface fleet was conceived by a number of policy planners, most notably by Robert Bowie,⁵ as a means of preserving U.S. operational control over nuclear weapon systems while simultaneously enabling European NATO allies to participate meaningfully in the management of a Western nuclear deterrent assigned to NATO.⁶ It subsequently received the support and encouragement of the Kennedy Administration, principally because it seemed to point the way toward a reasonable solution to a problem of monumental complexity. Among other advantages, MLF presented the French with an alternate to an independent deterrent of their own, allowed for the eventual deployment of British nuclear submarines under the aegis of NATO,⁷ granted the West Germans a larger voice in alliance nuclear policy-making, and, by preserving ultimate U.S. operational control in the form of a Presidential veto, furthered the twin objectives of nonproliferation and single unified command and control.

It was recognized by the preceding as well as the present Administration that MLF, while representing a worthwhile political gamble, a point of departure, was in no sense a final solution. In sum, multinational control could never convince the French of meaningful multinational management, and joint financing could not persuade the British that their sagging economy could afford the additional burden of cost stemming from the project. As for the Germans, their strong enthusiasm and early endorsement only served to make the product less "saleable" in the eyes of several of the smaller NATO members, in particular the Benelux countries. On all these accounts, MLF proved to be a short-range political palliative incapable of bridging the larger substantive policy gap.

In retrospect, MLF was probably doomed from the outset, but like many other attempts at resolving the complex political problems of the nuclear age, it had to be tried. It is probably fair to say that MLF's greatest shortcoming was the attempt to accommodate too many conflicting requirements within a delicate and fragile framework; and in raising more questions than it could effectively resolve, it stretched the fabric of alliance beyond a realistic level of

expectation. In any case, it is to the credit of the Johnson Administration that what began as a worthwhile political gamble did not end up a binding commitment to an ill-fated diplomatic enterprise.

European attitudes

The desire of our European NATO allies to play a larger role in strategic decision-making stems less from any real fear of inadequacy of the American deterrent or resolute determination to employ it⁸ than from a sense of underparticipation in the strategic decision-making process. Following the development of ICBM's by the Soviet Union in the late 1950's, some Europeans feared that the U.S. might be inclined to react cautiously to overt Soviet aggression in Europe; they associated the McNamara strategy of graduated response with a conventional war limited to a European theater. Although the likelihood of such a contingency is remote and we have consistently and unequivocally stated that no distinction would be made with respect to a Soviet attack on Europe or the North American continent,⁹ European reservations are easily understandable. Geography and ultimate dependence on the U.S. for security in the nuclear age appear to be the chief motivating factors.

Of more immediate concern, however, is the European sense of underparticipation in the strategic decision-making process, a mood cogently captured by former British Defence Minister Duncan Sandys:

Apart from differences of view about the organizational structure of NATO, there is a feeling among certain of the member governments that the United States has an unduly large say in the formulation of policy and does not adequately consult its allies before taking decisions which affect the interests and safety of all.¹⁰

Similarly, from the American dialogue over future NATO nuclear arrangements has come the admonition from Robert Bowie that the United States could doubtless be more alert to allied sensibilities than it has been sometimes in the past.¹¹ MLF, if it accomplished nothing else, confirmed the reality of European underparticipation in nuclear policy-making and legiti-

mized the search for a new strategic balance within the NATO framework. However, before passing on to a discussion of future alternatives to MLF, let us briefly consider U.S. strategic requirements and how past policy has supported them.

U.S. strategic requirements

The U.S. requirement for centralized control of strategic decision-making is a product of the twin objectives of nonproliferation and the maintenance of a flexible-response posture. The latter is necessary in order to widen the potential escalatory gap between conventional and nuclear war, and it provides for graduated deterrence based upon measured response to overt aggression. We have already noted European uneasiness with respect to this strategy, stemming largely from geographical considerations and a position of nuclear inferiority within the alliance.

Over the past 10 to 15 years, U.S. policy has been characterized by a firm adherence to the principle of nonproliferation. It was hoped that such a policy would effectively dissuade the French, in addition to other nonnuclear non-NATO countries (e.g., India, Israel, Egypt, Sweden, etc.) from proceeding with a nuclear weapons development program of their own. Despite the priority placed on the goal of nonproliferation as evidenced by its universal import, subsequent events have proved such hopes overly optimistic, especially regarding France, where just the opposite has taken place. With respect to NATO, and in particular to France, the worthwhile objective of nonproliferation has been damaging to alliance solidarity by creating the somewhat paradoxical situation of withholding U.S. assistance to the French nuclear weapons program while simultaneously maintaining a special relationship with Britain in nuclear and defense-related areas once she had developed an independent nuclear capability. It is a fact that this special relationship, which in effect represents preferential access to U.S. strategic decision-making, continues to be a major determinant of the current antithetic French attitude with respect to NATO's integrated command structure.

It is not here suggested that nonproliferation be totally discarded as a worthy goal of policy. However, its continued applicability to an allied power that has already achieved nuclear power status must be seriously questioned.¹² In doing so, one should recognize that nonproliferation is at the bedrock of the present Franco-American impasse. In my view, changed conditions in the form of a French *force de frappe* argue persuasively for a more consistent policy with respect to both the British and the French national nuclear deterrents.¹³ The long-term deleterious effect of present policy on Franco-American relations has already been considerable, and nonadjustment to this new reality would appear to put into question the entire concept of Atlantic security arrangements with France as an active participant.

Future Prospects

If we can agree that the objective of translating current European underparticipation in the strategic decision-making process into a more meaningful contribution is an urgent and necessary one, our inquiry is reduced to a search for ways and means of achieving this goal. In seeking a less ambitious but more productive gambit than MLF, U.S. policy should be influenced by careful attention to the following considerations: British willingness to place important elements of her strategic force under an Atlantic Nuclear Force (ANF)¹⁴ provided the U.S. and France make a similar commitment; the existence of the French *force de frappe* as a potentially significant and useful contribution to future alliance sharing schemes¹⁵ (here the present Anglo-American special relationship in nuclear affairs, including the close coordination between SAC and the RAF, could serve as a model); and a strong desire on the part of West Germany for a larger voice in strategic decision-making.

Strictly speaking, there are at present two principal directions of policy flow which might be envisaged with respect to a more equitable distribution of nuclear responsibilities within the NATO framework. One would be to work

toward the establishment of a multilateral force within the existing NATO framework, similar to MLF but less subject to an ultimate American veto. It would of necessity involve strategic operational hardware and could, for example, take the form of the British-backed Atlantic Nuclear Force or that of a future European regional deterrent.¹⁶ The other avenue would be to pursue, as the major thrust of American policy, some form of nuclear accommodation or adjustment within the planning sector and simultaneously promote the greatest possible coordination among the three existing national nuclear deterrents (U.S., British, French). Here, those NATO powers with a vital interest in nuclear policy-making (generally conceded to be the U.S., United Kingdom, France, Italy, and West Germany) would function as the acknowledged custodian in nuclear affairs for the remaining NATO members within guidelines established by the Special Committee of NATO Defense Ministers.

In my view, it would at present be a mistake to push boldly ahead on the heels of MLF's scuttling with the kind of broad and sweeping plans which an ANF successor would require. It would, moreover, be counterproductive inasmuch as the result would almost surely be a series of long, drawn-out negotiations over the nuclear control issue which could only serve to further alienate the French and thereby exacerbate existing alliance tensions.

Similarly, a European Community deterrent, as some students of NATO affairs have urged, would represent a highly probabilistic venture. Prospects for the requisite European political integration appear extremely dim, especially in the wake of the obvious disharmony evinced at recent Common Market parleys. Furthermore, De Gaulle, who prefers to speak *for* Europe rather than *about* Europe, is unlikely to offer to merge the French and British deterrents or bring Germany into nuclear-sharing arrangements as an equal partner. Finally, such a scheme would not really be desirable from an American strategic perspective inasmuch as it would be destructive of the centralized command and control requirements for a strategy based upon graduated deterrence and flexible options.

In the main, our principal objective in future NATO nuclear arrangements must be to preserve a strategic posture of graduated deterrence permitting measured and flexible response to potential aggression. The instrumentality designed to achieve such an objective can only be a unified nuclear deterrent, which means, in essence, continued reliance upon existing strategic operational hardware (SAC) as the mainstay of our deterrent force. Further, because a complementary objective of U.S. foreign policy remains the nondissemination of nuclear weapons, a system of unified command and control is essential in working toward a nonproliferation treaty with the Soviet Union. At the very least, the road toward that goal must be kept open. It is for this reason that we must continue to reject *in principle* the formation of new national nuclear deterrents by NATO (and non-NATO) countries, while in practice most closely approximating this end through intimate coordination with existing non-U.S. NATO strategic forces. While U.S. interest in lessening the danger of nuclear war cannot be effectively served by an increased number of national deterrents in any future NATO system, closer coordination at the operational level among presently existing strategic forces would be of considerable value. In the past, Secretary McNamara has urged that any strategic forces in Europe not assigned to NATO should be closely coordinated with our forces.¹⁷ Inasmuch as coordination is the only available and feasible method of approximating unity of command and control, it possesses strong credentials as a principal desired objective of U.S. policy with respect to future NATO nuclear arrangements.

General de Gaulle's recent public statements on the future extent of French participation in NATO's integrated defense structure represent a disappointing step backward in "rethinking" NATO nuclear arrangements, particularly in finding ways and means of effecting close coordination between the French *force de frappe* and the U.S. deterrent. Ultimately, both French and American security is dependent upon the deterrent capacity of the West (primarily SAC), a fact of which the French leader is certainly cognizant. At the

same time, while any French strategic force in the foreseeable future will represent little more than an instrument of marginal military utility,¹⁸ it must be remembered that military utility and political utility are to be judged by different standards. With an independent deterrent, France is attempting to buy the ability to make sovereign decisions of a strategic nature and great political consequence, albeit at a commensurate economic cost. This may, in turn, augur future political liabilities for the great powers, as Sir George Mills suggests in a recent book review:

... we cannot deny that in a world that is terrified at the prospect of nuclear war the ability to use nuclear weapons in however small a way is a most potent threat vis-à-vis even the most powerful of nations. It must at least ensure that very serious notice is taken of the holder's rights and wishes.¹⁹

Thus the real value of the French deterrent may turn on its ability to persuade American policy-makers to broaden the base of strategic decision-making.²⁰

This fact has serious implications for future U.S. policy with regard to NATO nuclear arrangements. In short, the French may be reasonably expected to pursue those policies which will most significantly enhance French prestige and influence. This may be accomplished in one of two ways: greater French participation, either within the alliance or outside it. Recent events, such as French withdrawal from NATO's integrated military structure and Gaullist objection to the continued presence of American bases on French soil, point in the direction of the latter option.

At the same time, two central questions with respect to ultimate Gaullist intentions must be taken into account in planning and pursuing a flexible and productive NATO nuclear policy. First, if we were to make substantive concessions to De Gaulle on the issue of nuclear control, would the French leader, in return, forego a diplomacy which, while paying lip service to the need for an Atlantic alliance (though without a NATO military apparatus), continues to be conducted without regard for the purposes of the alliance?²¹ Second, if De Gaulle is really prepared to remove

himself from the shelter of Atlantic security arrangements as presently constituted in NATO (and we must assume from past actions that this is well within the realm of possibility), what would such a move mean in terms of future U.S. participation in European regional security arrangements?

Some have maintained that in his relations with the U.S. De Gaulle's primary objective has always been and remains not nuclear assistance for its own sake but policy coordination that would enhance French and European influence throughout the world.²² For this school of thought the 1958 De Gaulle memorandum to the British and American leadership indicated a willingness to reorganize NATO to deal with political and strategic problems on a worldwide basis and to set in motion machinery that would permit shared strategic decision-making. The self-appointed alliance "Big Three" (U.S., U.K., and France) would have, in effect, consolidated NATO planning and policy-making functions, thus eliminating the need for SHAPE; and for this reason the De Gaulle proposal was deemed unacceptable. The essence of the 1958 memorandum was the acceptance *in principle* of future American hegemony with respect to strategic operational hardware provided that the suitable consultative machinery could be set in motion. In truth, with the French *force de frappe* a reality, the General has less reason to fear arbitrary American action in the nuclear domain; given the emergence of a favorable political climate, now very much lacking, the kind of intimate allied coordination he envisaged becomes a more distinct possibility. In practice, however, De Gaulle continues to regard SHAPE as the creature of the Pentagon and responsive solely to American initiative. This fact is clearly reflected in the following actions by France over the intervening years, leading to withdrawal from NATO's integrated command structure on 1 July 1966:

- Withdrew its Mediterranean and Atlantic fleets from NATO
- Assigned only a small part of its Air Force to the integrated air defense of Europe

- Assigned only a small part of its land forces to NATO
- Established an isolated position within the alliance on strategy
- Did not allow non-French nuclear weapons on French territory
- Did not participate in the studies for a multilateral force (MLF)
- Was the only country not to accept the 1962 Athens guidelines for the use of the atomic bomb
- Refused to sign the Nuclear Test Ban Treaty
- Did not participate (although it is a member) in the 18-nation Disarmament Conference in Geneva.²³

In the light of the preceding considerations, the argument that De Gaulle could probably be placated by substantive American concessions in the area of nuclear policy-making is far from convincing. The dilemma is that such concessions represent the only basis on which De Gaulle would allow France to continue as an active participant in Atlantic security arrangements. The alternative for U.S. policy-makers (i.e., to allow France to go her own way) would only serve to reinforce a fundamental and long-term Gaullist objective: to move France out of present Atlantic security arrangements and into a European arrangement without U.S. participation.

The unsolved problem of European security in the twentieth century has been German security, now temporarily accommodated within the present NATO framework. From a Gaullist perspective, this is most likely NATO's greatest utility and certainly a strong reason not to wreck entirely NATO's military structure. At the same time, the great danger from the U.S. perspective is a German-American bond growing strong at the expense of an alliance devoid of meaningful shared strategic decision-making. The end product in practical terms would be an alliance without a *raison d'être*. Alternatively, a deteriorating German-American partnership stemming from an unplacated German nuclear appetite could trigger a Franco-Soviet rapprochement in the form of a nonaggression pact or a more substantive

mutual security arrangement between the two countries.²⁴ This would, in effect, represent a bold and dramatic attempt on the part of two of Europe's three nuclear powers to get ahead of past events, and under such circumstances (aroused German sentiment over a continued position of nuclear inferiority within the alliance) we should not be totally unprepared for a future French initiative in this direction.

On balance, therefore, the risks with respect to future NATO nuclear arrangements are too great to allow for a policy of drift. Inasmuch as these arrangements will largely hinge on the future state of Franco-American relations, we must, as a minimum, keep open the Franco-American dialogue in nuclear affairs. As we do so, the vital thing, as Robert Bowie suggests, "is to see that our actions do not enhance, but erode the leverage of De Gaulle. We must fully recognize the reality of the European feelings which he seeks to exploit and the effect of our attitude on his ability to do so."²⁵ A policy that does not succeed in this sense can only be counterproductive.

Conclusion and Recommendations

We must either be prepared to coordinate operational and strategic planning activities at the highest levels with the French or run the risk of forcing De Gaulle or a successor government into some form of accommodation with the Soviets from which could spring a future European regional security arrangement without U.S. participation. The heart of the matter, therefore, is to bring the French—and necessarily to a lesser extent the Germans—into the same special relationship we have entered into with the British in the domain of nuclear policy-making. (Inasmuch as Germany possesses no strategic operational hardware and is treaty-bound to acquire none, this must be accomplished, as regards Germany, wholly within the planning sector.) To persuade the remaining NATO membership of the reasonable and efficacious character of such an accommodation is well within the capability of a judicious and discreet diplomacy.

In the discharge of NATO requirements and responsibilities in the nuclear domain on a more equitable basis, the following recommendations constitute a fundamental and necessary point of departure. While they will not resolve the problem of control or effectively grapple with the question of "who will pull the trigger" and "who will guard the safety catch," which in the final analysis is dependent upon progress in the more limited sphere of planning and coordination, they do perform a valuable service by preserving the alliance as a "medium for consultation, negotiation, and reconciliation."²⁶ In seeking to put the alliance back on the road toward building a viable Atlantic partnership, they may be looked upon as a first step toward the partial solution of a continuing dilemma.

the planning sector

(1) The Special Committee, presently an ad hoc Defense Ministers group, should be organized into a permanent body with an extended mandate to consider questions relating to nuclear sharing within the alliance.

(2) In the past, combined training programs carried out in conjunction with allied air forces have been highly effective in providing NATO forces with skilled and competent pilots. Such programs should now be broadened to include NATO strategic planning officers, thus forming a pool of qualified NATO officers available for assignment to SACEUR's newly established Deputy for Nuclear Affairs.

(3) Selected Joint Strategic Target Planning Staff (JSTPS) officers with experience in strategic planning should be made available to SACEUR's Deputy for Nuclear Affairs for tours of two to three years. Such officers, drawn primarily from field-grade ranks, would be designated by the Director of JSTPS and approved by SACEUR or their delegated representatives.

(4) Implementation of the above could be accomplished within the framework of suitably modified security procedures, which would allow for the free exchange of nuclear planning and targeting information among the "Big Three" NATO nuclear powers together

with West Germany. This would in no way constitute proliferation inasmuch as each possesses the requisite information relating to nuclear weapons development and West Germany is treaty-bound not to embark upon such a weapons development program.

the operational sector

(1) Close coordination between the French *force de frappe* and the U.S. Strategic Air Command should constitute the major thrust of American policy in the operational sector.

(2) As a first step toward improving the political climate, the feasibility of instituting a "hot line" between the SAC and French command posts should be carefully examined. This communication link would serve a useful purpose in coordinating routine operational exercises and as a means of effecting secure communications during periods of heightened international tension.

The preceding recommendations should be undertaken through "quiet diplomacy," away from the glare of publicity and concomitant national prestige. Considerable progress in NATO nuclear sharing has already been made on the tactical level, with General Lemnitzer, in his dual capacity as NATO and U.S. European Commander (CINCEUR), acting as the administrator of U.S. bilateral agreements. This has been achieved with the aid of "permissive action links," a combination of physical and electronic checks designed to prevent unauthorized use of warheads.²⁷

Our efforts should now be directed toward achieving this same objective on the level of strategic decision-making. While there is no magic formula, convenient technical device, or other panacea to cure NATO's most serious ailment, the overall picture is not entirely gloomy, and there is room for measured optimism. Most important in this pursuit, our course of action must make a positive contribution to the twin goals of closer participation in strategic decision-making on the part of our NATO allies and simultaneous discouragement of further proliferation within the alliance.

In the planning sector, the Nuclear Plan-

ning Working Group of the Special Committee represents a promising vehicle for more broadly based allied participation in strategic planning than has hitherto been possible.²⁸ Although the French continue to boycott this group, substantive concessions in the form of meaningful nuclear sharing arrangements (as outlined at the beginning of this section) would be a strong inducement to alter present policy. Furthermore, and of equal importance, by offering the moderate and less nationalistic public in French political life a choice rather than an echo in nuclear policy-making, and by communicating this offer persuasively, we can draw upon a potentially important source of political support redeemable in the post-De Gaulle era.

While fuller participation in shared strategic planning is one of the principal tasks to which the Special Committee is addressing itself,²⁹ no provisions appear likely in the near term for combined control over existing strategic operational hardware within the committee framework. In the long term, however, we can attempt to reach that distant goal by broadening and building upon an enlarged multinational effort in the planning sector³⁰ and by according our NATO allies increased participation in the conception and formulation of strategic planning requirements.

The contribution of the Royal Air Force Bomber Command to overall Western deterrence has been both significant and salutary and should serve as a useful model in exploring ways and means of increasing French participation in the operational sector. The French, for their part, have already indicated a willingness to embark upon joint targeting between their *force de frappe* and SAC as a prelude to more intimate forms of coordination.³¹ This would represent an important first step inasmuch as experience culled from years of war planning has highlighted the importance of joint targeting to overall strategic planning. In point of fact, the Joint Strategic Target Planning Staff at SAC headquarters was created in 1960 to fulfill this very requirement with respect to U.S. Air Force and Navy strategic strike forces.³²

The Germans could probably be counted

on to support U.S. initiatives in nuclear policy matters in view of the important gains to be derived from a larger German voice within the NATO framework. While a widespread fear of a resurgent German nationalism with nuclear teeth constitutes an ever present specter haunting the councils of the alliance, we should also recall that Germany has never indicated a desire for an independent national strategic deterrent force. On the contrary, the Erhard government has indicated a willingness to accept continued American operational hegemony in exchange for bilateral tactical nuclear arrangements of the "permissive links" variety and movement toward some effective consultative machinery for nuclear policy planning.³³ In sum, it would appear that there is no major barrier standing in the way of German presence at the highest levels of strategic planning, and this is very likely the price we must pay to secure continued German-American solidarity with respect to future NATO nuclear arrangements.

In conclusion, however, we should not harbor illusions with respect to the underlying reality of the "NATO nuclear dilemma," as some have called it.³⁴ In the absence of a political or defense community in the North Atlantic area which would exercise ultimate authority over nuclear weapon systems, the

nation-state members of the alliance continue to regard the NATO system instrumentally and accord priority to individual national security requirements. MLF was an attempt to resolve this dilemma; however, because MLF bypassed the critical issue of nuclear control and dealt exclusively with mixed-manning and ownership, it could never be brought safely home to port. Thus we may expect that future nuclear control arrangements in NATO will continue to be one of the most intractable problems facing U.S. policy-makers in the Sixties and beyond.

In the present, continuing security restrictions with respect to the flow of atomic information among NATO allies do represent a final significant barrier to be surmounted in achieving meaningful and productive nuclear sharing within the alliance. In the long run, however, the political will to do so, rather than technical limitations, is likely to prove the more important and the most important determinant of real progress. The question then becomes whether or not it is in the national interest to pursue a policy of nuclear sharing. In this article I have sought to establish that the long-term security of the United States will be best served by such a policy.³⁵

Hq Strategic Air Command

Notes

1. See especially Max Frankel, "MLF: An Obituary," *New York Times*, 22 December 1965, in which the author asserts that the idea of a mixed-manned fleet has died quietly after five years of debate. Also, Jack Raymond, "Pentagon Says U.S. Is Dropping Plan for a NATO Nuclear Fleet," *New York Times*, 16 October 1965.

2. The terms "strategic decision-making" and "nuclear policy-making" are used interchangeably throughout this article.

3. Strategic deterrence must be distinguished from the tactical deterrence function which falls within the purview of U.S. area commands (i.e., USAFE, PACAF) as well as anti-submarine warfare units in the Navy.

4. The contribution of the British Bomber Command and the French *force de frappe* represents 3 percent and 1 percent respectively.—François Duchene, *Beyond Alliance*, L'Institut Atlantique, Boulogne-sur-Seine, p. 25.

5. Robert R. Bowie, a former Assistant Secretary of State, is currently Director of Harvard's Center of International Affairs.

6. Ultimately, the MLF was to include a fleet of 25 surface ships bearing 200 Polaris missiles at a cost of \$5 billion. It was to be jointly manned by multinational crews.

7. Polaris-type submarines built with the aid of U.S. design information and certain critical missile components replaced the canceled Skybolt air-to-surface missile in the British inventory as a consequence of the 1962 Nassau agreement. This took

place on the condition that the British-built Polaris submarines would eventually be placed under some form of NATO control.

8. Initial fear of U.S. strategic inadequacy was dampened by the disclosure that the so-called "missile gap" was, in fact, nonexistent. Resolute determination to employ SAC forces was demonstrated convincingly at the time of the Cuban missile crisis. What some Europeans question, however, is whether such firmness would be exhibited in a purely European contingency.

9. For example, President Kennedy's "Ich bin ein Berliner" discourse.

10. *NATO News Letter*, NATO Information Service, Paris, January 1964, p. 24.

11. Robert R. Bowie, *Shaping the Future—Foreign Policy in an Age of Transition* (New York and London: Columbia University Press, 1964), p. 51.

12. See especially David Robison, "Learning to Live with Nuclear Spread," *Air Force and Space Digest*, August 1966, pp. 56-65, in which the author makes a convincing case for the inevitability of nuclear spread and for a policy which allows us to adapt to this eventuality by learning to live in a multipolar, multinuclear world.

13. General de Gaulle's recent *obiter dictum* regarding future French participation in NATO's integrated command structure will greatly handicap efforts to rethink NATO nuclear-sharing arrangements.

14. Part of the conditions agreed to at Nassau called for the eventual assignment of the British Polaris submarine force to a future NATO nuclear force. At the time, it was hoped that MLF would form the core of such a force, or at least a meaningful point of departure.

15. Timothy W. Stanley in his recent book, *NATO in Transition: The Future of the Atlantic Alliance* (New York and London: Praeger, 1965), notes that "soon there will be the French *force de frappe*, which though proudly proclaimed as an independent force, will serve at least one member of the Alliance, if not NATO itself." (p. 241) Dr. Stanley, formerly with the Office of the Secretary of Defense, is currently a member of the U.S. delegation to NATO.

16. Professor Philip Mosely of Columbia University has imaginatively outlined the requirements of a European regional deterrent in the 1970's which, he believes, would provide the most constructive solution to the problem of NATO's current imbalance in nuclear responsibilities.—Karl H. Cerney and Henry W. Briefs (eds.), *NATO in Quest of Cohesion* (New York: Praeger, 1965), pp. 257-70.

17. In a statement before the House Armed Services Committee on 18 February 1965 Secretary McNamara urged that "any strategic nuclear force in Europe not assigned to NATO should be closely coordinated with our own force so that they could be jointly targeted."

18. Soviet bombers or medium-range missiles could wipe out most of the current Mirage IV fleet, and the few remaining would have little chance of penetrating fully alerted Soviet defenses.

19. *Air University Review*, XVII, 2 (January-February 1966), 87.

20. Raymond Aron has suggested that influence and autonomy in the area of nuclear control do not necessarily go together. Thus France might very well have more influence on U.S. strategy if she were to abandon her "Lone Ranger" course. See *The Great Debate* (New York: Doubleday, 1964), p. 104.

21. France continues to pursue an independent policy with respect to China and Vietnam, as well as arms control and disarmament negotiations in Geneva.

22. Cerney and Briefs, p. 451.

23. *The Atlantic Alliance: Allied Comment*, prepared by the Subcommittee on National Security and International Operations of the Committee on Governmental Operations, U.S. Senate (Washington: Government Printing Office, 1966).

24. Such a possibility was very much in the minds of political observers of the De Gaulle visit to the Soviet Union in June 1966.

25. Bowie, p. 62.

26. This concept of NATO's primary function is General Vandevanter's (pp. 4-5).

27. Such "permissive action links" are currently installed on allied weapon systems, including aircraft and tactical missiles, in the following NATO countries: Belgium, Britain, Canada, France (prior to July 1966), Italy, the Netherlands, Turkey, and West Germany. See especially John W. Finney, "We Are Already Sharing the Bomb," *New York Times*, 27 November 1965.

28. Its present membership includes the U.S., U.K., Germany, Italy, and Turkey.

29. The two other tasks of the Special Committee are communications and data exchange. Working groups have been established in these areas.

30. Recommendations 2 and 3 would figure importantly in this connection.

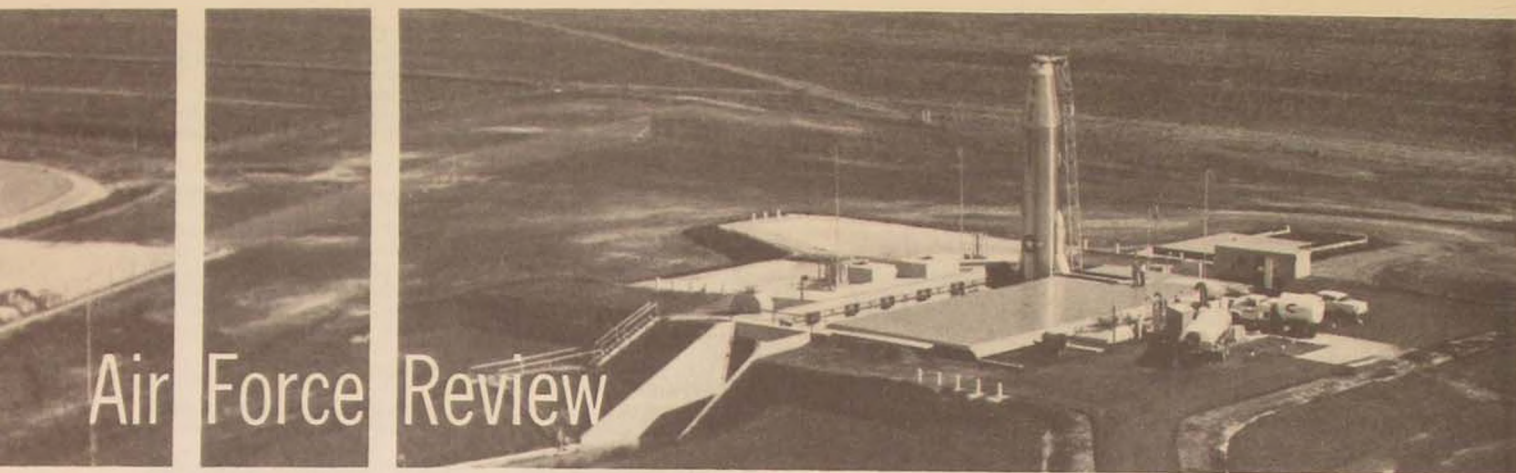
31. Cerney and Briefs, p. 450.

32. In 1963, representation on the JSTPS was extended to include a NATO contingent headed by a general officer (currently Brigadier General Richard Kight, USAF). However, it is important to note that this group does not enjoy access to the full scope of strategic planning and targeting; only to those targets falling under SACEUR's command area.

33. Here the Germans entertain great expectations with respect to the Special Committee.

34. Henry Kissinger, *The Troubled Partnership* (New York: Macmillan, 1964), pp. 117-25.

35. The 1958 amendment to the Atomic Energy (McMahon) Act permits the U.S. to share certain limited information concerning the external and operating characteristics of nuclear weapons with specified NATO countries.



WHAT WE ARE DOING WITH SURPLUS ICBM COMPLEXES

COLONEL EDWARD M. JACQUET

THE United States Air Force spends more money yearly than any other government department or agency: some \$20 billion to approximately \$5 billion spent by the National Aeronautics and Space Administration. In keeping with such great fiscal responsibility, the Air Force is both cost-conscious and economy-minded. Thus when faced with the massive disposal job resulting from obsolescence of early intercontinental ballistic missiles, it did a great deal of head scratching. So far, the Air Force has apparently scratched its head in the right places, for the money we are saving from salvage and sales is quite gratifying.

Our problem was (and still is): How do we dispose of all those expensive Atlas and Titan launch facilities now that they are surplus to the strategic inventory?

The phase-down of Atlas E and F and Titan I created one of the largest disposal tasks the Air Force has undertaken since World War II. It is also the first disposal job of its kind that we have faced. We had 149 operational Atlas and Titan launchers, located on 113 separate pieces of real estate scattered from the East Coast to the West Coast—

specifically from Plattsburg AFB, New York, to Beale AFB, California.

We had fewer complexes than missiles because the Titan I housed three missile silos per complex. Including all the stored operational test missiles, those still on manufacturers' production lines, and the spare missiles owned by the operational units, a total of 216 missiles became surplus. The overall investment in the three weapon system programs, including R&D, had been \$5.5 billion.

Even if we had had to spend that sum of money with no thought of financial recoupment, we would still have had to do it: national security demanded massive deterrence, and these first-generation missiles filled the void known as the "missile gap." So it is an extra dividend that from our disposal program already nearly \$1 billion worth of equipment (based on original cost) is scheduled for scientific, educational, and service reuse as well as reuse by other government agencies.

First it was decided that this total of 216 surplus missiles should be stored for use as suborbital boosters in subsequent R&D projects. For the next five years a total of 133 suborbital missions have been identified for these

216 boosters. The remaining 83 may eventually be committed to missions not now envisioned.

As far as economical use of these surplus missiles is concerned, this arrangement is good business. It costs \$3.4 million to buy an Atlas missile and launch it for a Nike mission; but one of these surplus or outmoded missiles can be stored, overhauled, modified, and launched for less than \$1.5 million. That means we can expect a saving on these 133 missions of more than \$250 million in the next five years. This sum is not included in the \$1 billion in equipment to be reused already mentioned.

retention of selected complexes

What to do with the expensive complexes from which these missiles were to have been launched? Which ones should be retained? How should they be stored in a preservation status? We settled on 44 complexes for Atlas F's and 15 for Titan I's, a total of 59 retained complexes. (Since there are three launchers in a Titan I complex, the 15 complexes contain 45 Titan I launchers.)

The retention of these 59 complexes provided the time necessary to accomplish a sound evaluation of any possible future Air Force missions for these facilities. Because of the attractions of hardness, self-sufficiency, and dispersal of these complexes, a study was a prerequisite to any further consideration of dismantling and disposal. Twenty-seven Atlas E launchers (nine at each of three different bases) were considered too soft to be of future Air Force value and were declared excess. Three Titan I complexes at Larson AFB, Washington, and 24 Atlas F complexes at Lincoln AFB, Nebraska, and Schilling AFB, Kansas, were declared surplus because these bases were being closed. These complexes must be disposed of.

A later study of the 59 retained sites showed that only a small number of complexes—estimated at less than 10 percent—would be needed for new Air Force missions. The actual number of complexes needed for new and presently envisioned missions was finally reduced to four:

(1) The Elizabeth Titan I complex at Lowry AFB, Colorado, as a data-processing center.—A hardened facility for storage of records and other data is essential, our study group believes, for future command and control requirements. A Titan I missile complex would not only provide adequate space, with a nuclear hardness protection factor, but would also accommodate a data-processing center. The Elizabeth Titan I complex at Lowry was selected as most suitable for the new mission. A study contract for \$450,000 has been made available to prove or disprove the feasibility of this utilization.

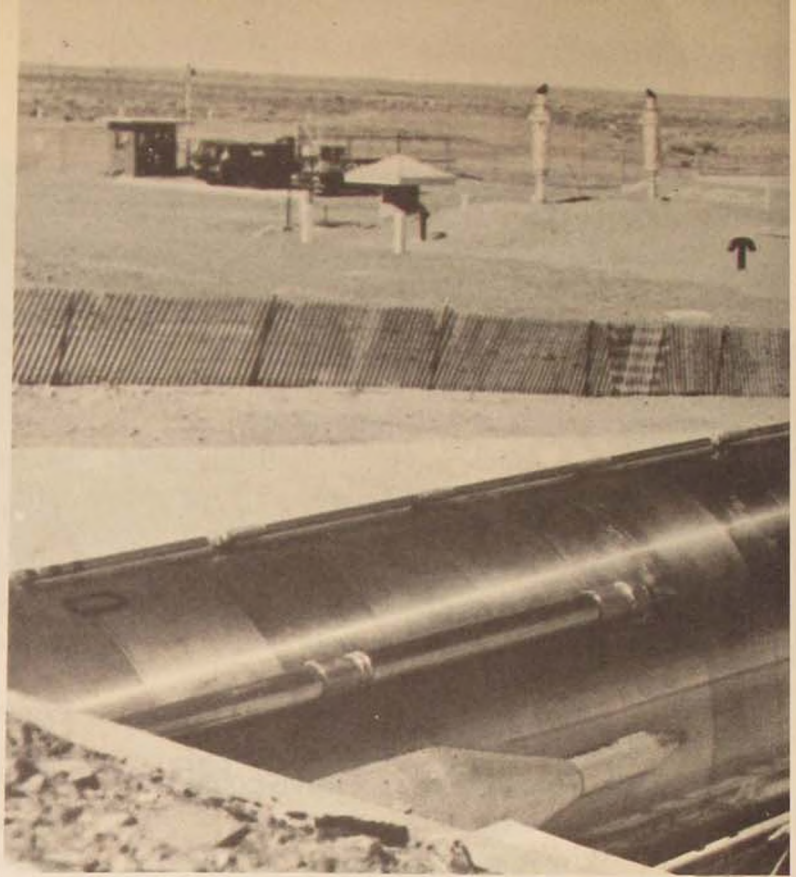
(2 and 3) The Bennett Titan I complex at Lowry and the Oreana Titan I complex at Mountain Home AFB, Idaho, as atmospheric observation stations.—Our study group believes that hardened atmospheric observation stations will be required in the near future. Preliminary studies indicate that this pair of complexes will meet the requirement and that the necessary modifications will be economically and technically feasible.

(4) The Chico Titan I complex at Beale AFB, California, as a communications center.—Our study group found that a hardened, self-sufficient, remotely located Titan I complex could make an ideal facility for a communications and control center. A RAND Corporation study "On the Possibility of Using Titan I Sites as Command and Control Centers" has established that conversion of a Titan I complex for this mission would be more economical than construction of a new facility. The complex at Beale was selected as the most feasible and cost-effective in which to locate such a facility, particularly since a commercial airfield is adjacent to the site.

Presentations have been made to the Air Staff requesting approval of the resources required to support these recommended missions. A final decision is pending.

Although all Atlas E and F and Titan I complexes (except Chico) were determined to be excess to known Air Force needs, we nevertheless retained withdrawal rights and authority should any of these complexes be needed for a new Air Force mission not yet known.

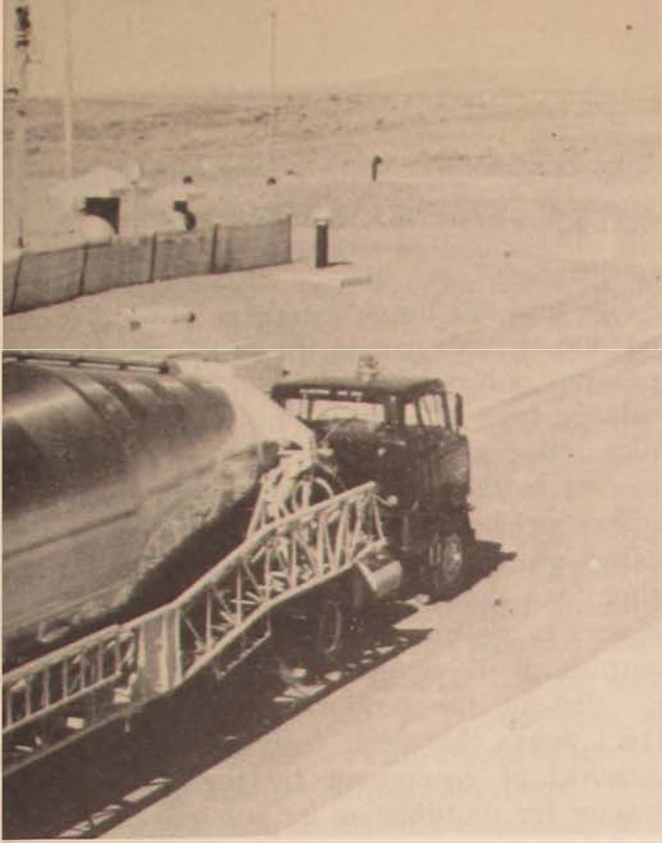
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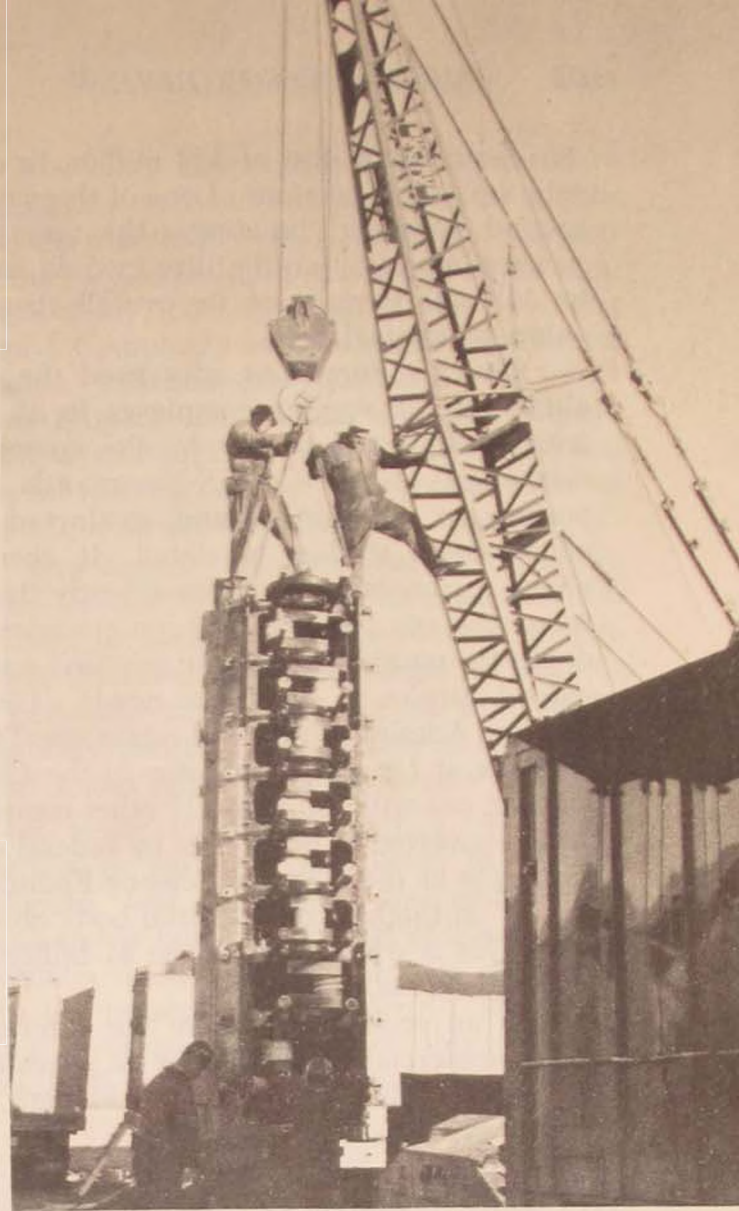
From its deactivated launch site at the Fairchild AFB, Washington, complex, an Atlas E heads for storage at the San Bernardino Air Materiel Area, California.

To remove the generator from an underground power plant required use of a special torch to open a big enough hole through the thick roof.



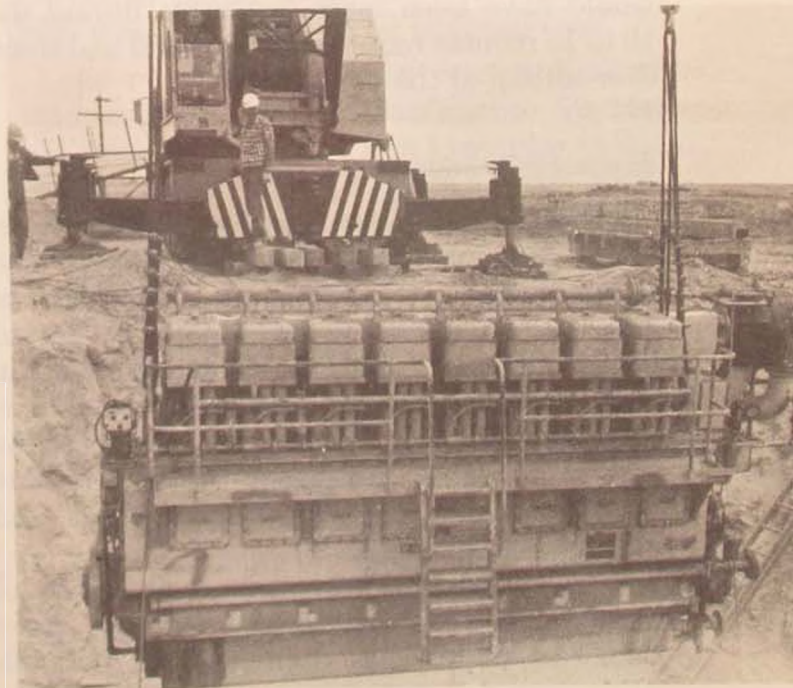


The generator crankshaft is hoisted from an elevator shaft by a crane.



A 32-ton section of roof is lifted from the underground power plant.

The 50-ton, 1500-kilowatt diesel generator reaches the surface. Components of the power plant will be put back together and reconditioned for new use, probably in South Vietnam.



Assuming a cost of \$24 million to duplicate the usable portions of one of these underground hardened buildings, the annual expense of storing it until utilized would amount to only .01 percent of its overall structural value—a nominal cost.

The Air Force has advertised the availability of the surplus complexes to all commands, requested review by the commands, convened an all-ConUS-commands symposium on the subject, and conducted cost-effectiveness studies in detail. It therefore seems reasonable to state confidently that the remaining complexes have been considered in depth for conversion to new missions and are indeed surplus to Air Force needs. (General Services Administration will retain one Titan I complex at Lowry for transfer to the City of Denver. GSA will also retain 17 other complexes to be converted to other uses by federal agencies, such as the National Science Foundation for an "on the horizon" celestial body observatory. This is where part of the \$1 billion savings will be realized.)

As an economy measure we determined that commercial power should be provided to all the surplus complexes. Although this switchover was initially expensive, the cost was amortized by August 1965, and 24-hour Air Force operation of diesel generators, requiring operators, parts, fuel, and maintenance, would have been more expensive during the 10 to 15 months required for disposal and some dismantling of the complexes.

disposal of equipment

A major part of our disposal job is the redistribution of surplus equipment. Normally, redistribution of assets and disposition of surplus equipment and real estate (to be sold by GSA) would take 15 months and cost an estimated \$12 million. This schedule was shortened through joint screening and review of the lists of available equipment by GSA, Defense Supply Agency (DSA), the three services, and all other federal agencies.

Invitations for bids were advertised to all potential salvage contractors. Already more than \$3.5 million has been realized from sal-

vage contractors. Still to be realized are the proceeds from sale of all the real estate.

An interesting aside relates to some "cross-fertilization." DSA personnel includes Army, Navy, and Air Force members. During a discussion of DSA's part in the Air Force disposal program, a Navy officer referred to the service-salvage type of contract by which the Navy dismantles and disposes of surplus or outmoded battleships. A participating Air Force officer pricked up his ears at this reference, asked some pertinent questions, and the upshot was that the Air Force borrowed the Navy's battleship method for disposition of its surplus missile equipment.

Briefly, the service-salvage type of contract works this way: "service" refers to the removal of equipment by the private contractor for reutilization by DOD and other federal departments and agencies. In this way the contractor pays for the privilege of obtaining the remainder of the equipment as salvage for himself. Any money received by DSA as contract manager is credited to the Department of Defense. The service-salvage contract is even more attractive to the government, since 150 to 200 SAC military personnel at each affected base have been performing dismantling tasks within their capability.

When the service-salvage contractor has stripped the silo, as a safety measure the metal doors will be welded in a closed position and the gate of the chain link fence locked. This will reduce Air Force caretaking expenses to practically nothing. The complex in this condition will go to GSA for sale as real estate.

If necessary, the complete complex could be released to GSA for dismantling and disposition as real estate, and any money received would revert directly to the U.S. Treasurer. Close cooperation with GSA and DSA will be continued throughout this period of service-salvage contracts, which ends in April 1967. Turnover of 21 complexes to GSA for sale as real estate was accomplished in less time than normally required.

Two Atlas F missile sites at Plattsburg AFB were selected as pilot models for awarding service-salvage contracts. Both these silos had a history of excessive water leakage (more

than 60 gallons an hour), and the estimated cost to connect commercial power to one silo was more than \$30,000. In addition to these reasons for early removal from the inventory, the purpose of letting contracts on these particular complexes was to test the market from a salvage contractor's viewpoint and later to measure the profit or loss to the successful bidder. Defense Logistics Services Center of DSA was the contract manager.

GSA and DSA both have advertised, through national news media, the availability of the complexes as well as individual pieces of surplus equipment. We hope this advertising will not only promote broader interest in the surplus equipment and real estate but also attract more contractors interested in performing salvage or dismantling operations.

To interest and instruct customers in the equipment, an Atlas silo at Lincoln AFB was dismantled as a demonstration. The equipment was placed on display in a large hangar on the commercial side of the field. Signs on each piece of gear described its use, function, and original cost. The cost of this six-week demonstration was 8000 military man-hours and \$18,000 for two cranes. This price was small compared with the gain already realized through obtaining equipment for DOD reutilization, and it is expected to be much smaller relatively when all the gain is counted.

disposal considerations

Some of the background of our disposal actions and proposed actions will indicate the great care that was exercised before conclusions, firm or tentative, were reached.

We extensively developed and expanded the ideas and suggestions made for disposal of the surplus launch complexes. The second report, "Atlas E and F and Titan I Facility Utilization Proposals," dated 5 February 1965, recommended an engineering survey contract to include compatibility and cost effectiveness on the four most promising potential missions: (1) Automatic Digital Information Network (AUTODIN), (2) command and control centers, (3) communications centers, and (4) Minuteman storage.

The RAND Corporation was requested to undertake a study and research project to consider the practicality and feasibility of converting the surplus facilities to new Air Force uses. RAND's study, "On the Possibilities of Using Titan I Complexes as Command and Control Centers," reached the conclusion that "... Titan I operational squadrons being deactivated would provide useful and economical sites for housing command and control centers that might be needed in the near future."

This report contained mathematical formulas for cost computations and was used as the basis for several Air Force reviews. In general it provided the background for helping to persuade new users of the practicality, feasibility, and cost effectiveness of converting Titan I and Atlas facilities to new missions:

—as major USAF headquarters. A Titan I complex or series of complexes at Denver, Colorado, was considered and reviewed in detail as the possible location of a survivable, alternate major headquarters as compared with the present location. An Air Staff study group published its report on this subject in June 1965. Although the Titan I facility with its hardness was attractive, there were other considerations such as personnel manning and costs of initial communications installations which were of overriding concern. For this particular requirement, use of a Titan I complex was determined to be uneconomical.

—as reconstitution team center. Extensive study was made by the Sacramento Air Materiel Area of the Chico Titan I complex at Beale AFB, for use by an emergency aircraft maintenance team and for storage of emergency hospital equipment. Many factors were considered in this evaluation. However, the annual cost of facility operation, including permanently assigned personnel, was too high in view of the relatively low priority of the mission. It was decided not to use a Titan I facility for this purpose.

—as storage for surplus Minuteman missiles. The Boeing Company had made a preliminary review from an engineering standpoint of the feasibility of storing surplus Minuteman missiles in Atlas F silos. It is possible to store

about 18 missiles in an upright position in two layers in an Atlas F silo. Air conditioning and quantity distance capabilities (the explosion separation distance necessary for safety of personnel and equipment) were the attractive characteristics. Because of wide dispersal across the nation and lack of suitable roads or railroads, all Atlas F sites were eliminated from this consideration except the three at Vandenberg AFB, California. Atlas engineers from San Bernardino Air Materiel Area drew up detailed engineering plans for conversion of a silo to Minuteman storage requirements. Ogden Air Materiel Area, as Minuteman project office, was assigned responsibility for investigating methods of storage of the surplus missiles. At present, although the Vandenberg Atlas F silos are not surplus as real estate, it appears that the surplus Minuteman missiles will be stored by other methods.

DURING the past two years many suggested uses have been studied and reviewed by the ConUS commands and the Air Staff to insure that no Air Force requirement has been overlooked prior to dismantling and disposing of these surplus complexes. Of the 59 complexes available, retention of the four Titan I complexes represents the total confirmed Air Force

requirement, the other 55 being in our current disposal program.

Configurations of complexes for other federal agencies vary considerably as a result of equipment removal. In some only the minimum environment equipment remains; in a few, almost all equipment remains. All diesel generators and associated gear will be removed for use in Southeast Asia. Immediate availability of more than 200 of the diesel generators alleviated an emergency situation by providing electrical power for new airfields in Southeast Asia. The diesel generator industry was unable to supply this many diesels on such short notice.

Our disposal effort, necessary for economic reasons, has not yet ended, but all known potential follow-on Air Force missions for the phased-out facilities have been thoroughly reviewed to insure that they are not dismantled and disposed of until there is no further U.S. government need for them. The high cost of these complexes was justified, regardless of profit or loss, when they were needed to meet the threat then existing in the world. Now that national security has benefited to the full from their use, we will still salvage a pretty penny of the taxpayers' dollars.

Hq United States Air Force

REDISTRIBUTION AND MARKETING

Watchdog of the Air Force

NORRIS M. BLACK

JUST AS advances have evolved in other concepts of operation in this technological age, so has the old concept of an Air Force "junk yard" changed. The redistribution and marketing of excess and surplus property has developed into big business. So big, in fact, that it represents a billion-dollar worldwide enterprise.

The Redistribution and Marketing Division, Warner-Robins Air Materiel Area, Robins AFB, Georgia, commands a notable position in this endeavor. WRAMA received over 167,000 turn-in documents (AF Forms 695) in 1965, covering approximately 14 million units and representing over \$287 million worth of Department of Defense excess property. Of this amount, \$41 million worth of equipment was transferred to other DOD agencies and the Department of Health, Education, and Welfare. Over \$22 million worth of electronic property was issued to the Office of Education, HEW, at one time in February 1965, to be used for assistance in the training of student electronic engineers. More than 30 colleges and universities were represented at the on-site screening held at Robins to inspect and select material for their respective organizations.

To better understand the overall concept of the phases of its operations, let us first examine the reason for R&M's existence. The generation of excess and surplus property, which is the backbone of the R&M organization, is accomplished in several ways: (1) Changes of mission, tactical and strategic plans, (2) obsolescence, (3) unserviceability, and (4) the

rapid technological changes and developments in our highly technical aircraft and electronic systems. Even though the property may be designated as Air Force excess or surplus, it does not become excess per se until total Department of Defense requirements have been satisfied. To accomplish this initial phase of the operation, all items with a total acquisition cost of \$50 or more that have become excess to an Air Force inventory manager must be reported to the Defense Logistics Service Center (DLSC), Battle Creek, Michigan. Here the items are placed on computer tapes for a "screening" period of 120 days. All Department of Defense requirements for such property are then matched against these assets, to prevent the disposition of any material which could be used.

Efforts to redistribute the property are continued after the excess material has been received in Redistribution and Marketing. Property is first classed as reportable or non-reportable. The criteria in making this classification are based on three factors: (1) condition, (2) federal stock class (FSC), and (3) dollar value. To distinguish between the two classifications, Air Force Manual 67-4 is used. In part II, chapter 2, attachment I of this manual, a current listing of all FSC's, with dollar values, is provided for reporting purposes. Dollar values for reporting purposes vary from \$50 to \$3000 minimums, dependent upon the class of material being reported. After reporting has been accomplished, listings reflecting the description of the property are prepared



Electronics trainees at Dudley-Hughes Vocational School, Macon, Georgia, one of the recipients of \$22 million worth of equipment from Warner-Robins Air Materiel Area in February 1965.



Automobile maintenance students use equipment from Robins AFB Redistribution and Marketing facility.

Thirty colleges and universities sent representatives to a public on-site screening at Robins AFB, to select electronics equipment suitable to their instructional needs.



and distributed by the DLSC and the General Services Administration. Other efforts to achieve redistribution include physical screening of the excess property by DOD, GSA, and other federal agency representatives and personal contact with authorized recipients. Utilization specialists at Robins are employed to assist these authorized recipients in screening processes, etc. Over 4500 DOD and other federal agency representatives visited Robins in 1965 to screen and select excess property.

Nonreportable property need not be reported to either DLSC or GSA but must be held for a period of 30 days for local area screening. During this time all local or regional area authorized recipients are permitted to screen and ascertain their requirements. Usually the sale of this property is conducted in one of two ways, by "sealed bid" or "spot bid." The determination as to which method will be used is based upon factors concerning best monetary returns and types of items being offered.

In the redistribution and marketing field a new concept called "Purchase Request Screening" has recently evolved, whereby all purchase requests are first routed through the R&M agency before outright purchase. This process was originally developed at Robins AFB and subsequently adopted by all other bases as a result of an AF Logistics Command directive. During the period from FY 64 through FY 66, this program resulted in a net savings of \$732,931 at WRAMA alone. One can readily compare the savings on a worldwide basis. Through diligent and untiring efforts, R&M personnel have scored success in the better utilization of available resources.

In keeping with the obsolescence of the terms "junk yard" and "scrap heap," specialization has come about in the R&M concept. Typical examples are the specialized aircraft and electronic systems parts that have no commercial value and are sold for their basic material content. Critical and precious metals are identified upon receipt in Redistribution and Marketing, not only for their extremely high monetary values but also because some of the metals are vital to national defense. This is particularly true of precious metals such as platinum and silver that are being used in our

missiles and submarines. WRAMA's silver recovery program has provided 2150 troy ounces of silver since July 1964 from the on-base hospital and laboratories that process X-ray and photographic film. Since then an additional 7000 troy ounces of silver and 219 troy ounces of platinum have been made available to DOD programs. At about \$1.29 per troy ounce for silver and \$100 per troy ounce for platinum, the savings from such a recovery program are obviously substantial.

High-temperature (heat-resistant) alloy metals must also be identified and segregated by the Redistribution and Marketing Division. There are now 32 different combinations of cobalt, nickel, monel, tungsten, titanium, steel, and copper that fall within this broad category, and others are continually being added. Some of these metals are worth as much as \$.94 per pound on the open market, so it can readily be seen why proper identification is of vital importance. Specialization has indeed emerged as a dominant factor in all phases of the R&M operation.

The significance of the R&M motto, "Watchdog of the Air Force," becomes apparent when one considers that the 14 million units processed by WRAMA in 1965 included anything from a worn-out stapling machine to a huge locomotive. Many of the items had to be tagged for "special handling" because of their potential effect on public health, safety, security, and private industry. This category includes items that possess lethal characteristics and are dangerous to public health and safety. Others were so categorized from the standpoint of military security and had to be withheld from the public to prevent further use as a military item. It is here that the term "demilitarization" enters the picture. The degree of demilitarization of an item depends upon the inherent characteristics it possesses. This process varies from the removal of one small portion of the item to its total destruction. For example, an emergency radio receiver/transmitter must be processed through Redistribution and Marketing for normal transfer and utilization requirements under normal procedures up to the point of donation or sale to ensure that all DOD organizations have an opportunity to select it.

After this point, it must be demilitarized, but only to a degree that would prevent the emergency receiver/transmitter from transmitting particular frequencies. On the other hand, some items must be totally destroyed so that no further use can be made of them.

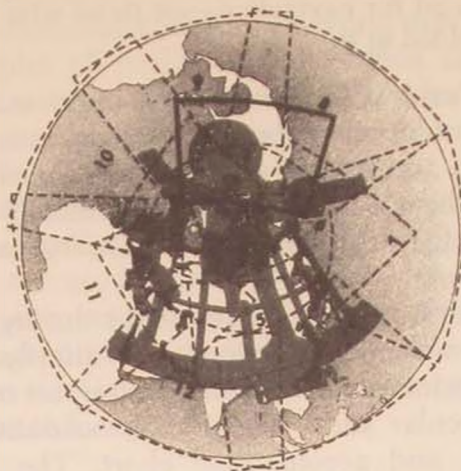
A strict accounting must be maintained for all property within the custody of the Redistribution and Marketing Division. The account of the Property Disposal Officer (PDO) is audited annually by the resident and/or visiting Air Force auditors and is also subject to audit by the General Accounting Office and other federal agencies. The PDO acts for the commander of any installation on all matters pertaining to excess and surplus personal property transactions. The responsibilities are numerous and varied. He is responsible not only for protecting the government's interest but also for the reputation of the Air Force establishment

for honest, courteous, and fair dealing in all relations. He is responsible under law to exercise the utmost care in discharging his duty to prevent irregularities or opportunities for fraud or collusion that would bring discredit or embarrassment to himself, the commander, or the U.S. government.

Yes, the "junk yard" concept has indeed evolved to the highly technical intricacies now standard in the areas of redistribution and marketing. The generation and redistribution of excess or surplus property will continue so long as our nation exists. As we study the processes of generation, redistribution, reclamation, demilitarization, and the numerous other phases of the redistribution and marketing operation, we can readily see why R&M continues to uphold the motto, "Watchdog of the Air Force."

WRAMA, Robins AFB, Georgia

In My Opinion



THE MILITARY NAVIGATOR IN AEROSPACE WARFARE

CAPTAIN WILLIAM A. COHEN

SOMEWHERE within the great spectrum of aerospace warfare evolved the military navigator. Most aviation historians trace his origin to the rated observer of World War I, but he was not really doing much navigating in those days. His job consisted of artillery spotting, taking note of enemy concentrations, and photographing troop movements; an "observer" in the true sense of the word. On occasion he was required to drop everything and fire his machine guns at unfriendly aircraft attempting to discourage the accomplishment of his mission. With the end of World War I, the "O" designation for observer faded into disuse.

The postwar aviation boom was accompanied by a wave of long-range aerial exploration. It can be quite properly compared to the great sea voyages of the sixteenth through

eighteenth centuries. With aircraft venturing great distances from land, the aerial navigator was badly needed—but no "aerial navigator" existed. Marine navigators were soon called to serve. The methods they had used to navigate at sea were not always acceptable for use in aviation, but the principles were the same. The aerial navigator took those principles, adapted the methods, and learned how to navigate in the new medium. He became an essential member of the overwater aircrew.

Technology marched on, and in the years prior to World War II long-range bombing became feasible. "Trained aerial navigators are now much in demand," said General "Hap" Arnold.¹ Young officers of that day prepared to meet that demand. One such officer was a certain Lieutenant LeMay, who in the years 1937–41 learned the trade the hard way: by

servicing as a navigator in the B-17. These young pilots, learning the complicated skills of aerial navigation almost from scratch, came to a definite conclusion:

What the Air Corps would need in the foreseeable future, it seemed to John Egan and myself, was more and more men specifically trained for navigation—not those who had just dabbled in it.²

World War II was soon upon us. It saw the elimination of the pilot trained as a navigator, the acceptance of the idea that what the Air Force needed was “men specifically trained for navigation.” The rated military navigator was born.

The navigator’s equipment during World War II was still, in general, very simple. It consisted primarily of Weem’s plotter, set of dividers, circular slide rule (dead-reckoning computer), and aeronautical chart. The nearest most navigators got to automation was a sextant that incorporated an averaging device.

After the war, high-performance aircraft and a rapidly developing technology changed all that. By 1959 General Bertram C. Harrison, a former SAC wing commander and then Director of Personnel Procurement and Training, was declaring:

Probably no breed of modern military man has as much single responsibility as the navigator, nor as much technological magic at his fingertips. His training is painstakingly arduous and unbelievably costly. Not only must he master thorough knowledge of complex mechanical systems, physical laws, and mathematical principles, but he must also develop the qualities of leadership, responsibility, and the difficult job of deciding, at any minute, between right and wrong and then staking his life upon it.³

The military navigator had arrived, but the question remained: Where? The question remains but partially answered today. How can this highly trained airman be best utilized within the framework of aerospace warfare?

In general, two concepts are in evidence among those of the world’s air forces that employ military navigators. One concept, typified by the United States Air Force, visualizes the navigator primarily as a highly trained special-

ist to be utilized solely in the sphere of his specialty as a practicing navigator. After a number of years engaged in this task, those navigators so qualified are encouraged to emigrate to other fields of Air Force specialty, such as intelligence, guided missiles, or research and development. Their development as commanders and senior staff officers is begun and continued in these nonflying specialties. A limited number of them are retained in the flying commands in various staff positions. The other concept, established in the Royal Air Force, Soviet Air Force, and Armée de l’Air, conceives the navigator primarily as a flying officer on a par with the pilot flying officer, and in some cases higher standards for entrance into the profession are required. A description of flight training in the RAF is an example:

If anything, the navigator must have educational attainments higher than those looked for in a pilot, so that, other things being equal, a candidate who had hoped to be chosen for pilot training might find himself picked for a navigator’s course. This, as we mentioned earlier, is a direct compliment to him, and he need not fear that his superior mental powers will imperil his chance of promotion for the duration of his service career. All the appointments open to a pilot are open to him. . . .⁴

. . . a navigator often captains an aeroplane and can command a squadron.⁵

Not only are there different attitudes toward the qualifications and role of the navigator, there is also some question of the continuing need for navigators at all. Like the pilot, the navigator is linked closely with the manned aircraft and manned spacecraft. Also like the pilot, there exists a school of thought that counsels elimination of the navigator in favor of some combination of black box and electronic wizardry. The navigator’s employment as a practitioner of navigation will depend on his capabilities versus requirements generated by future aircraft and spacecraft supporting the aerospace mission. His use as a commander of flying units in the USAF will depend both on the extent of his engagement as a crew member and on some modification in thinking as to his status as a flying officer.

capabilities of the military navigator

Perhaps the military navigator's chief trait is his ability to adapt his past experience, knowledge, and training to changing concepts, tactics, and weapon systems. Twice in the last few years, this adaptability was a major factor in retaining in the SAC inventory a manned bomber, designed for a tactic grown obsolescent in the face of a vastly altered technology. The first instance came about as a result of a requirement for prolonged low-altitude, high-speed flight. The second came with the introduction of the air-launched stand-off missile. Could an officer other than a navigator, styled, say, an "airborne missile operator," have been trained to operate the Hound Dog air-to-ground missile system? Unquestionably! But would this have been accomplished as easily, as speedily, and at unit level as was in fact done? And would such an officer have been able to handle the multiple of complex navigational tasks which the present operator of this system is also responsible for?

The experienced navigator can accomplish remarkable feats under highly adverse conditions when bringing his judgment to bear on operational situations. If a portion of his automatic navigation system fails, he manipulates what he has left and fills the gap by manual skill. If all computers break down, he switches to an alternate, completely manual method of navigating, such as celestial navigation. If that is not available, he uses what information is available to compute a position by dead reckoning. The definitive work on navigation, *The American Practical Navigator*, puts it this way:

Human beings who entrust their lives to the skill and knowledge of a navigator are entitled to expect him to be capable of handling any reasonable emergency. When his customary tools are denied him, they have a right to expect him to have the necessary ability to take them safely to their destination, however elementary the knowledge and means available to him.⁶

When black-box mechanisms grind to a halt and preplanned conditions vanish in a puff of smoke, the navigator can utilize a judgment educated by training, knowledge, and expe-

rience to complete the mission successfully.

The navigator has the capability of applying experience gleaned from the navigational sciences to problems occurring in administrative areas. Thus, he has the capability of serving as commander or staff officer. For example, sending an ICBM from launch point to target involves complicated electronic equipment and computers, but above and beyond that the very principles of guidance and control are based on the science of navigation. Today many USAF navigators serve as commanders and staff officers of guided missile units. In flying organizations, they serve as unit navigation officers and on the staffs of higher headquarters. At the present time, however, the USAF does not employ navigators as commanders of flying units, although it is apparent from the experience of various foreign air forces that navigators do possess this capability.

future employment of the military navigator in the USAF

The navigator's future use in aircraft will depend upon the doctrine of aerospace warfare under which the navigator will work and the weapon systems supporting this doctrine. Long-range strategic bombers have traditionally used the navigator. That he is still considered indispensable in this role is attested to by the fact that both the FB-111 and the Advanced Manned Strategic Aircraft (AMSA) plan to make use of the specialty. Navigators of transport aircraft increase the mission reliability of their aircraft at no penalty in aircraft performance. For certain specialized activities of transport aircraft, such as air refueling or airdropping of troops or equipment, their services are absolutely essential to mission accomplishment. The navigator is found in almost all transport aircraft currently in use, and plans call for his presence in the C-5A. Reconnaissance aircraft use navigators or not, depending upon the particular type of reconnaissance required. Battlefield reconnaissance with "Bird Dog" type aircraft rarely requires the services of a navigator. On the other hand, the type of strategic and tactical reconnaissance performed by such aircraft as the RB-57, RB-66, and SR-71 demands a navigator's assistance. Most fighter aircraft

have never had the need of a navigator, but there have been exceptions, the fighter-interceptor for one. The F-4C, crewed by a pilot and a "pilot systems operator," might also be considered an exception. Although the "pilot systems operator" is a rated pilot, it is generally conceded that he is employed in navigational duties.

The reasons for the navigator's extensive use in aircraft are not difficult to ascertain. Long distances coupled with combat conditions make for a complex, continual, fatiguing navigational task. Under wartime conditions, radio navigational aids are frequently unavailable or unusable. New tactics necessary to permit aircraft to live in the air in this day of the ground-to-air missile require the pilot's full attention. Specialized tasks of navigation—bombing and aerial rendezvous, to mention but two—must be left to the navigator. Finally, the critical nature of modern warfare demands that every effort be expended to accomplish the mission, regardless of equipment malfunction or adversity en route. The navigator ensures that the mission will be accomplished.

As the Air Force becomes more deeply immersed in spatial activities, it will be increasingly confronted with spiraling demands made against on-board means of navigation in space. This is a result of two fundamental drawbacks of navigational assistance rendered from ground stations: (1) the range limitations of optical and radar tracking, and (2) the time delay aspect of radio communications. The range limitations of optical and radar tracking dictate that, in the vicinity of the moon and beyond, their ability to fix a space vehicle's position in space accurately is negligible.⁷ The time delay aspect of radio communications relates to the fixed speed of radio waves (186,000 miles a second) and the delay incurred when a ground station attempts to issue navigational instructions to a space vehicle some distance from the earth. In the cislunar environment, this means a delay of about one second, but when the distance is from the Earth to Mars, the delay would be almost five minutes!

Fantastic computers, inertial guidance, and automatic astrotrackers are in use in aircraft, and much of this equipment is adaptable

to navigation in space. However, the mean time to failure of the components of these electronic marvels is measured in hours or days, while extended voyages into space will require months or even years. The solution to this problem is manual navigating in space for all manned space flights operating at the limits of ground-based tracking capabilities. Space navigation, then, must never become completely divorced from the human navigator.

What is the reasoning behind the USAF regulation that permits only pilots to command aircraft and flying units? The logic goes something like this: since the pilot has his hands on the controls of the aircraft, for safety reasons only he can command that aircraft; since only the pilot can command a single aircraft, the pilot alone is qualified to command a flying unit made up of a number of aircraft. This thinking, however, is not entirely irrefutable. A precedent was set as early as 1919 when the Navy's NC-4 made the first transatlantic flight. The commander of the NC-4, Commander A. C. Read, was not the man with his hands on the controls but the aircraft's navigator. Today navigators have the opportunity to command aircraft and flying units in several major foreign air forces.

How is the operation of an aircraft affected with the navigator in command? Consider the aircraft with a pilot commander. The navigator locates weather on his radarscope. He reports to the pilot that they must alter heading 30 degrees to avoid it. The pilot, as commander, can accept the navigator's decision as to how to cope with the situation or, if the mission warrants, reject it. Consider the aircraft with a navigator commander. The pilot notes an engine problem. He reports to the navigator that they should land as soon as possible. The navigator, as commander, can accept the pilot's decision as to how to cope with the situation or, if the mission warrants, reject it.

The fear that a nonpilot flying officer would be unable to cope with emergency situations is unfounded—provided he is made responsible for them as the pilot is. After all, training can be given, and experience acquired, without the necessity of physically controlling the aircraft. There is nothing to prevent the

navigator's being made responsible for sections of the flight manual now the sole domain of the pilot, as the pilot was made responsible for certain bombing systems of primary interest to the navigator.

Another question raised is that since the pilot has physical control of the aircraft, he could disregard the navigator's orders if the navigator were the commander. At the same time, being a commander permits the pilot to use physical control of the aircraft as a technique to insure that his own orders are followed. No one can deny that this is a possibility, but I submit that the hypothetical situation overlooks the very essence of command. "Command," says one definition in the Dictionary of United States Military Terms for Joint Usage, "is the authority vested in an individual of the armed forces for the direction, coordination, and control of military forces." This definition gives no hint that having physical control over a vehicle is a prerequisite for commanding it. Nor is the commander of a tank, or the captain of a ship, the man having physical control over the vehicle. Command depends not on an artificial device but rather on "the authority vested in an individual of the armed forces." Success as a commander is achieved not by having physical control of an aircraft but rather by the commander's personal qualities and abilities and the mutual trust between himself and his subordinates. In an aircraft, the pilot and the navigator are mutually dependent on each other for their lives and the success of the mission. Both must contribute to the mission by operating to the maximum of their abilities within their specialties. Whether the pilot or the navigator is the commander, he must give much weight in his decisions to conclusions arrived at within the sphere of the other's specialty.

Assuming that the navigator can command aircraft, squadrons, wings, etc., What, then, is the advantage to the USAF? As a specialist in navigation and related skills of aerospace power, the navigator, with his background and experience in navigation, brings his own particular viewpoint to the solution of operational problems. As a unit staff officer, he can only advise and counsel the commander; he cannot

insure that his ideas will be adopted, since by regulation he is not an executive or decision-maker in the sense of having overall command authority and responsibility for the unit. It would seem logical that the Air Force's ability to accomplish its mission would be enhanced by giving command authority and responsibility to the slightly different approach in aerospace problems: that, for example, a unit whose mission is predominantly bombardment might benefit from having a navigator-bombardier as its commander.

In B-52 type aircraft, there are five officer crew members, two of whom are rated as pilots and three as navigators.⁸ This means that out of 100 officer crew members, 60 are navigators and 40 are pilots. Yet commanders at all levels of unit command will be drawn from the 40. If of these 100 officers in the B-52 force 25 have the potential of being outstanding commanders, the Air Force is getting only 10 (40 percent on the average). Can the Air Force afford to waste 60 percent of its potentially outstanding commanders in noncommand positions?

In 1958 a Second Air Force (SAC) project, known as the Connolly Component Project, was initiated with the purpose of improving the overwater and long-range navigation capability of B-47 crews. Among the many facets of the problem investigated was "navigator morale," of which the report had this to say:

Close association with crew and staff navigators during this project has indicated a general dissatisfaction with the navigator career field. . . . It is generally felt that limitations within the navigator career field require a transfer into some other and often unrelated field in order to progress. It may be debatable whether navigation capability is affected by this dissatisfaction, or whether steps should be taken to alleviate it. The fact remains, however, that many navigators are taking what actions they can to get into such fields as materiel and intelligence.⁹

And further:

A wealth of operational experience is being lost to SAC due to the diversion of operationally qualified navigators from operations to other career fields such as Intelligence, Materiel, Missiles, etc. Most of the weaknesses in the navigator program have long been recognized at crew

and wing level but there has been a natural reluctance to "fight the system."¹⁰

Whether the situation described by the Connolly Project report is due to dissatisfaction with the navigator career field or is with the blessing and by design of the Air Force, a wealth of navigational and operational experience is being lost to operations, where it is most needed, because of the USAF's present restriction of the command of flying units to pilots.

THE NAVIGATOR can either be utilized within the strict framework of navigation, chalking up his operational experience in flying organizations as background for other Air Force

specialties, or he can be utilized in the operational flying field on an equal basis with the pilot. Both these concepts concerning the use of the navigator in aircraft, spacecraft, and as a commander must be closely examined and decisions made with reference to the navigator's capabilities to meet the demands levied by the weapon systems supporting the aerospace mission. Like the pilot, the navigator has won a respected niche as a military specialist. With the pilot and the missileman, he shares the crucial responsibility for the defense of the United States through the conduct of operations in the aerospace environment. He should be used to maximum advantage by the Air Force.

Chicago, Illinois

Notes

1. Curtis E. LeMay with MacKinlay Kantor, *Mission With LeMay* (New York: Doubleday and Company, Inc., 1965), p. 114.
2. Henry H. Arnold and Ira C. Eaker, *Army Flyer* (New York: Harper and Brothers, 1942), p. 217.
3. Bertram C. Harrison, "A Speech to the 15th Annual Meeting of the Institute of Navigation," *The Navigator*, VI:49, Spring, 1959.
4. *The Wonder Book of the RAF* (6th ed.; London: Ward, Lock and Company, Limited, n.d.), p. 163.
5. *Ibid.*, p. 130.

6. United States Hydrographic Office, *The American Practical Navigator* (Washington: U.S. Government Printing Office, 1962), p. 61.

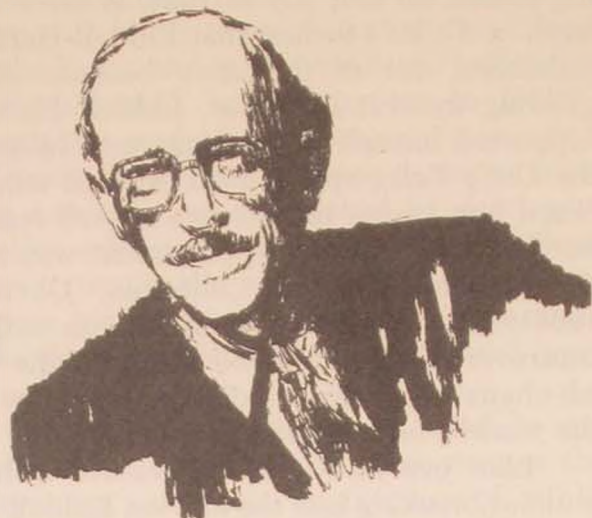
7. Select Committee on Astronautics and Space Exploration, *Space Handbook: Astronautics and Its Applications* (Washington: U.S. Government Printing Office, 1959), p. 68.

8. One of these three navigators is not a navigator-bombardier. He is a navigator who has undergone additional training to acquire the AFSC of Electronic Warfare Officer.

9. *Connolly Component Project, Final Report* (Second Air Force, SAC, 1959), pp. 14-15.

10. *Ibid.*, p. 36.

Books and Ideas



A THEORIST IN POWER

DR. THEODORE ROPP

THE FIRST volume of Sir Basil H. Liddell Hart's *Memoirs* has been brilliantly reviewed in these pages by Major Ray L. Bowers.¹ It deals with Liddell Hart's first forty-two years and the development of his military ideas. Volume II of the *Memoirs*,[†] curiously subtitled "The Later Years," covers the three years from Neville Chamberlain's appointment as Prime Minister, 28 May 1937, to the fall of France. The first three chapters, nearly half the book, center on the nine months before July 1938 when "The Captain Who Teaches Generals," to use the title of Jay Luvaas's study of his work,² was the informal, confidential adviser of Chamberlain's reforming Secretary of State for War, Leslie Hore-Belisha. As military correspondent of the Establishment's newspaper, *The Times*, to which he had moved from the *Daily Telegraph*

in 1935, Liddell Hart had been close to Hore-Belisha's predecessor, Alfred Duff Cooper. But Hore-Belisha also consulted him on the military appointments needed to carry out his "Suggestions on the Reorganisation of the Army to meet modern conditions, with a view primarily to the role of Imperial Defence," to use the title of the second of two memorandums that he sent Hore-Belisha after their first meeting at Duff Cooper's club on 7 June 1938.

While Liddell Hart admits Major General J. F. C. Fuller's primacy in the development of the theory of armored war, he was himself already widely known, as Luvaas puts it, as "a brilliant and prolific journalist, an unselfish and aggressive advocate of army reform, and an historian of commanding stature and integrity." The son of a clergyman, he had had one year at Cambridge and less than a year

[†]Basil H. Liddell Hart, *The Liddell Hart Memoirs, The Later Years, Vol. II* (New York: G. P. Putnam's Sons, 1966, \$7.50), 334 pp.

of combat when he was gassed and his command wiped out in the Somme offensive of 1916. Subsequently he had tried to get into the official history section, the educational corps, and the tank corps, and he had written the postwar infantry training manual before being placed on half pay in 1924. Whatever the truth of Fuller's feeling that Liddell Hart was railroaded out of the army because of his growing interest in armor, Liddell Hart has supported himself by writing since he joined the *Daily Telegraph* in 1925. Anyone who has heard him knows that he is a superb teacher, but his only teaching appointment was to be at the University of California, Davis, in 1965-66. In the late Forties he was still too controversial to be offered either of the British chairs in military studies for which he was the world's best-qualified candidate.

Like everyone who writes for a living without breaking into the movies, Liddell Hart has written too much, though his works are not as repetitious as those of Fuller or Jomini, who also wrote for a living. Liddell Hart is a better historian than Fuller and his equal in stylistic power. The personal warmth that made him the informal teacher of a whole generation of younger soldiers and historians has made him equally charitable toward the opponents of his ideas, the Colonel Blimps who managed war so badly in his few months in the trenches. These same characteristics—stylistic brilliance, historical honesty, and personal charity—come out with particular clarity in this account of his brief period in the corridors of power.

Hore-Belisha was just Liddell Hart's age, a veteran of the trenches, and a wealthy lawyer who had entered Parliament as a Liberal in 1923. He had helped to bring the National Liberals into the coalition Government of 1931. His debating power and financial competence had been rewarded by the Ministry of Transport in 1934. A well-publicized campaign to reduce traffic accidents showed that he could get things done. Chamberlain knew that the army was "the Cinderella" of the services, and he knew the "obstinacy of some of the Army heads in sticking to obsolete methods"; but the former Chancellor of the Exchequer was

determined not "to follow Winston's advice and sacrifice our commerce to the manufacture of arms."³ Hore-Belisha had ability, drive, and some public following, but he was also comparatively "young," a Jew, and a former Liberal with little influence at the top of the Conservative Establishment. Liddell Hart was a retired captain who had turned to journalism. Even the picture of "the partnership" shows as unlikely a pair of reformers as the War Office has had in its long history.

In the few personal glimpses he gives of his chief, Liddell Hart comments on his ingenuousness, poor health, and devotion to his mother. He knew little about military affairs. Liddell Hart supplied him with ideas about both policy and personalities. The amazing thing is that they accomplished as much as they did, before increasing publicity about their relationship and the basic weaknesses of Hore-Belisha's political position led to a break in July 1938, which "set me free to criticise publicly, with more pungency, the slow pace and inadequate measure of the steps that were being taken to meet the growing danger of war with Nazi Germany." In poor health and with his marriage breaking up, Liddell Hart also broke with *The Times* over its support of appeasement. His contract was finally ended at the end of November 1939. Hore-Belisha was forced out in January 1940, for his criticism of the high command's defenses "in the gap between the Maginot Line and the sea." While he was never in a personal position to recover his old role, Liddell Hart was consulted by Hore-Belisha on personalities in 1939. Their accounts of these difficult years do great credit to both men. Liddell Hart feels that Churchill did not use Hore-Belisha in 1940 because he was still "his main competitor in popular appeal." He did make him Minister of National Insurance in 1945, when he was trying to stem the Labour tide that swept him from power during the Potsdam Conference. Hore-Belisha lost his own seat, but Churchill made him a peer in 1954. He died during a speech at Rheims in 1957, some months after the Suez expedition had shown how much the British had forgotten of Liddell Hart's teachings.

Overseas readers may not find this volume as interesting as the first one. Many of its details are primarily of interest to historians of the Chamberlain era. With the Government bent on limited rearmament, the partners were limited to getting the right weapons and commanders for an army in which many older officers were still thinking of the largest possible number of infantry divisions. The depth of the opposition to Hore-Belisha comes out in Field Marshal Lord Ironside's diaries.⁴ Though he is not even mentioned in Ironside's index, Liddell Hart regarded Ironside as a good man, but not for his post as Chief of the Imperial General Staff. Most of Liddell Hart's personal assessments seem remarkably sound. What they show is how well he knew many younger officers and the extent to which many of them had already been converted to mechanization.

The Prime Minister made it clear to Hore-Belisha after the first discussion of his proposed reforms "that the needs of home and imperial defence must receive first consideration. . . . Any large increase in expenditure and in forces was ruled out." All that the partners could propose for the army was to double "antiaircraft forces" for home defense, to create "regional strategic reserves" for the Middle and Far East, and to create an Expeditionary Force of two armored divisions rather than one mobile and two infantry divisions. "The General Staff, in their plans for . . . a field force for the Continent similar to that of 1914, had not taken due account of the new [Italian and Japanese] threats to the oversea Empire, . . . nor of the new type of risk . . . in France from a German tank penetration of *Blitzkrieg* style."

The three chapters of the second half of the book deal with Munich, its results, and the outbreak of war. A short Epilogue deals with the collapse of 1940. Some of the most interesting material in these chapters details Liddell Hart's opposition to the adoption of conscription in the spring of 1939 and his support for a larger fighter plane program. He feels that Chamberlain's "hasty guarantee . . . to Poland . . . precipitated the Second World War. This foolish, futile, and provocative guar-

antee [resulted] from the British people's indignant reaction to this fresh proof . . . Hitler's pounce on Prague . . . of Hitler's aggressiveness, and Chamberlain's reaction to the combined political and emotional pressures which it generated." Conscription was adopted soon afterwards under similar popular pressures, "along with a desire to encourage the French and the Poles, and in the misplaced belief that the news would be a deterrent to Hitler." Though the evidence for conscription's effect on French, Polish, and German decisions is not all in, conscription was backed by many conservative military men. Its immediate effect, however, was to distort the reformers' military program by diverting "resources to non-essential kinds of equipment for non-essential types of forces."

On conscription, an issue on which he was on the losing side, Liddell Hart stresses the Government's weakness in the face of public opinion. In the bomber-fighter controversy, in which he supported the Government, we may legitimately ask if public opinion did not play a larger role than he now sees for it. He had always opposed gas and terror bombing as inhumane and counterproductive, but the immediate practical problem was not to provoke German bombing and to safeguard Britain "herself against a knockout blow. . . ." The advocates of "attack as the best defence" are too apt to forget the elementary principle that operations should proceed from a secure base. The catchphrase becomes dangerously absurd when used—at a time when war is an imminent possibility—for disregarding the need for shelters and other civil precautions while trying to build a bombing force for the future that can match Germany's at the moment. When claiming that money devoted to such precautions, as well as to antiaircraft guns and fighter aircraft, would be better spent in building more bombers, one would be wise to consider whether prevailing circumstances offer an adequate chance of having the advantage in competitive bombing. Here, in a passage that shows his fair-mindedness, Liddell Hart was opposing Lord Trenchard ("outstanding among the military leaders whom Britain has produced this century") and supporting such

men as the later Air Chief Marshal Sir Hugh Dowding, Air Vice-Marshal Richard Peck, and Marshal of the Royal Air Force Sir Cyril Newall. The decision in October 1939 "to form eighteen more fighter squadrons for the defence of Britain" went back to Scheme M of the Munich period. At that time, to quote Professor Robin Higham, the Air Ministry had taken "the traditional British view which Liddell Hart had so ably set forth in *The British Way in War[fare]* in 1932 and would uphold in his *Defence of Britain* in June 1939 in which dynamic defence was set forth not as the ultimate course in war so much as the only possible course which Britain could steer at that time."⁵

From the safe hindsight of a generation, a historian's only criticism of this second volume of memoirs is that it may not support Liddell Hart's insistence that "the collapse of the West in 1940 was a world-shaking disaster which changed the course of history for the worse. *Yet never was a great disaster more easily preventible.*" (Italics mine) Liddell Hart's whole account of conscription, for example, rests on the assumption that an all-armored British Expeditionary Force would not have been driven into the sea and on still other assumptions of basic changes in French, German, and Russian political and military policies. The whole work accurately reflects British concerns during these critical years. Like many similar recent accounts, it indirectly gives too much credit to British appeasers. Another example of this is Liddell Hart's hope in September 1939, after the partition of Poland, "now that Germany and Russia face each other, . . . friction is likely to develop, . . . which could prove our salvation, . . . if we allowed time for . . . [it] to develop, and did not precipitate a German offensive in the West by empty offensive threats on our part." The United States appears in the subject index for this volume only with the following subheadings: "need for action in Far East from," "danger of Britain becoming poor dependent of," "consequences of Nazi victory to," and "illusory belief in speedy victory in." The last entry refers to his American publisher, who wanted a one-volume history of the war "within

a year from the end of the war if possible, and in any case not later than 1942." This history, incidentally, will follow the present volume.⁶

In the classified list of Liddell Hart's works in which this last bit of information appears, the only "general" work is *Why Don't We Learn from History?* (1944). This makes it possible for a reviewer to ask, What are the main "lessons" of this volume by one of the greatest military theorists of this century? One, which he stresses repeatedly, is the difficulty of rearming without precipitating the very attack which rearmament was meant to deter. "It was a habit with us," he noted after a talk with Group Captain L. L. MacLean of Bomber Command in December 1938, "to assume that the date when our rearmament programme was completed was the date when war might come, and that the Germans would wait for it—whereas the Germans were disciples of Clausewitz who had taught that the right time . . . was not necessarily when you were most ready but when your . . . readiness was best in relation to your opponent's." This unhistorical jab at Clausewitz stemmed from Liddell Hart's *The Ghost of Napoleon* (1933) and was to be substantially revised in his *Strategy—The Indirect Approach* (1954).⁷ An equally important lesson, though it must be subsumed from his account of his partnership with Hore-Belisha, is that no single political or military reformer can force a major military policy change in the modern state unless he has real political power over a comparatively long period of time (as was the case with Lord Haldane and Elihu Root or Admirals Mahan, Tirpitz, and Fisher) and substantial support from at least part of the military establishment. Hore-Belisha's political power was too limited, but Fuller and Liddell Hart had converted many younger army officers to armor. One notes, finally, the lack of any index reference to "public opinion." Here again this volume accurately reflects its time. In Britain both political and military policies were decided by the Establishment, with occasional sops to public opinion. This was as true, incidentally, of Labour as of the Conservatives.

Only since 1945, as Professor Peter Paret

has noted, have we become aware of how difficult it is in peacetime to move the "many wheels" of the modern industrial state in time for effective action.⁸ All our advances in communications, political intelligence, and propaganda may be canceled by ever longer research, development, and industrial lead times and the danger of a far more devastating surprise by an aggressor alarmed by his victim's awakening. Here one of the most significant changes in Liddell Hart's *Strategy* (his *Decisive Wars of History* [1929] updated) is his realization that "the indirect approach is closely related to all problems of the influence of mind upon mind—the most influential factor in human history."⁹ This sentence is one reason why one puts this volume down with the hope of an eventual sequel. This Protean strategist is always learning, always expanding his vision and deepening his insights. He was neither embittered nor discouraged by his brief period of power, which he must now see

as one of great accomplishment in a strictly limited area. And since 1940 he has produced a number of fundamental works on both war and policy.

Strategy is surely one of these. Another was *The Revolution in Warfare* (1946). His greatest historical work may be *The Tanks* (1959), despite its misleading subtitle and concluding ten-page summary of the whole history of armored warfare. Though his *History of the Second World War* raises great expectations, the last essays in his *Deterrent or Defence: A Fresh Look at the West's Military Position* date from 1960. The only other survivors among the great military theorists of his generation, Mao Tse-tung and Charles de Gaulle, are no longer writing on military topics. So we must hope that Liddell Hart's reflections on his real "later years" may be even more memorable than these first two volumes.¹⁰

Durham, North Carolina

Notes

1. Major Ray L. Bowers, "The Peril of Misplaced Loyalties," *Air University Review*, XVII, 4 (May-June 1966), 93-97. Liddell Hart was too controversial to be knighted in 1938, and this well-deserved honor was not given him until 1966. Quotations in this review are from pp. 3, 125, 271, 274, 53-54, 213, 230, 245-47, 280, 260, 258, and 192.

2. Jay Luvaas, *The Education of an Army, British Military Thought 1815-1940* (Chicago: University of Chicago Press, 1964), pp. 376-424. The quotation is on p. 376.

3. R. J. Minney, *The Private Papers of Hore-Belisha* (London: Collins, 1960), p. 36, quoting Keith Feiling's *Life of Neville Chamberlain* (London: Macmillan, 1946).

4. Colonel Roderick Macleod and Denis Kelly (eds.), *Time Unguarded, The Ironside Diaries 1937-1940* (New York: David McKay Company, Inc., 1962).

5. Robin Higham, *Armed Forces in Peacetime, Britain, 1918-1940, a case study* (London: G. T. Foulis & Co., Ltd., 1962), p. 187. Higham's *The Military Intellectuals in Britain, 1918-1939* (New Brunswick, New Jersey: Rutgers University Press, 1966) deals with Liddell Hart and the other prophets of armor but breaks new ground on the various British writers on air power, to whom he devotes nearly half of his book. Liddell Hart's *The British Way in Warfare* was published by Faber in 1932, *The Defence of Britain* by the same publisher in 1939. Hore-Belisha had "invited Trenchard to become his unofficial War Office adviser at the end of 1937." Andrew Boyle, *Trenchard* (New York: W. W. Norton & Company, Inc., 1962), p. 710. Hore-Belisha had known him as Commissioner of the Metropolitan Police from 1931 to 1935, and their cooperation in reducing traffic accidents is reflected in Boyle's listing of Hore-Belisha only as Minister of Transport. Trenchard refused because Hore-Belisha, "however forthright and enterprising, was benighted enough to favour a separate air arm for the land forces."

6. To be published by Cassell. This list of Liddell Hart's works contains thirty books to Fuller's more than forty. Liddell Hart has also edited three others.

7. *Why Don't We Learn from History?* was published by Allen & Unwin in 1942, *The Ghost of Napoleon* by Faber in 1933 from his Lees-Knowles Lectures, and *Strategy—The Indirect Approach* by Faber in 1954, as an enlargement of *The Decisive Wars of History*, 1929. The American edition, in both hardback and paper, is by Frederick A. Praeger, New York.

8. Peter Paret, *Innovation and Reform in Warfare*, The Harmon Memorial Lectures in Military History, Number Eight (Colorado Springs: United States Air Force Academy, 1966), pp. 6-7. The quotation is from the Hanoverian military reformer, Friedrich von der Decken, in a work on the professional soldier and the state, published in 1800. The real obstacle to reform, Decken felt, was the failure to realize that "a close relationship exists among the separate components of the military estate, which in turn is bound up so intimately with the state as a whole, that in order to achieve anything many wheels must be set in motion that often seem far removed from each other." Though we often feel that these wheels are harder to move in a peacetime democracy, the processes of totalitarian state planning may introduce almost equal rigidities in their industrial preparations for war.

9. *Strategy*, pp. 18-19.

10. *The Revolution in Warfare* is here listed as published by Faber in 1946. The American edition was published by Yale University Press, New Haven, in 1947. *The Tanks—The History of the Royal Tank Regiment . . . 1914-1945* was published in two volumes by Cassell in 1959. *Deterrent or Defence, A Fresh Look at the West's Military Position* was published by Stevens and Frederick A. Praeger in 1960. Since *Strategy* contains most of Liddell Hart's reflections on the First World War and since some of his works on that war are still in print, the only one of his classics that is almost unobtainable is *A Greater than Napoleon: Scipio Africanus*, published by Blackwood in 1926. Some Liddell Hart enthusiast may well prove me wrong on this point, too.

The Contributors

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The Air University Review Awards Committee has selected "The Analysis Mystique" by Major William M. Henderson, USAF, as the outstanding article in the January-February 1967 issue of the *Review*.

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