R.C.A.F. STAFF COLLEGE

JOURNAL

1959

R. C. A. F.
STATION LIBRARY
TRENTON - ONT.

CONTENTS

PAGE

NATIONAL STRATEGY AND THE ARMED SERVICES—*Air Vice-Marshal E. J. Kingston-McCloughry, C.B., C.B.E., D.S.O., D.F.C., R.A.F. (Retired)* 9

SURPRISE AND BLITZKRIEG IN SOVIET EYES — *Dr. Raymond L. Garthoff* 16

LIMITED WAR STRATEGY IN THE NUCLEAR ERA — *Aquila* 25

LOGISTICS IN THE MISSILE AGE — *Maj. Gen. F. S. Besson, Jr.* 37

UNITED NATIONS ARMED FORCE "THE GREAT ILLUSION" — *Mr. Peter Stursberg* .. 44

NATIONAL POLICIES AND ARMED FORCE — *W/C John Gellner, D.F.C., C.D. (Retired)* 53

CIVIL DEFENCE ROUNDUP — *Maj. Gen. M. H. S. Penhale, C.B.E., C.D. (Retired)* 59

HUMAN NATURE AND WAR — *Dr. Marcus Long* 68

THE DISCUSSION AND FORMULATION OF NATIONAL SECURITY POLICY — *Prof. Richard A. Preston* 74

A CONCEPT FOR CANADA'S MILITARY ORGANIZATION — *Prize Winning Essay* — *F/L J. R. Rundle* 85

THE EFFECT OF ENVIRONMENTAL CONDITIONS IN SPACE ON MATERIALS FOR SPACE TRAVEL — *H. P. Tardif* 91

IS ALLOUT NUCLEAR WAR FEASIBLE? — *CDR B. C. Thillaye* 96

PERSPECTIVE ON WAR — *Capt. R. H. Murphy* 101

A COMPARISON OF NINETEENTH AND TWENTIETH CENTURY BALANCE OF POWER — *LCDR J. W. B. Buckingham* 106

BOOK REVIEWS 116

PRICE ONE DOLLAR

1909 1959

Golden Anniversary of FLIGHT IN CANADA

IN THIS YEAR OF CELEBRATION, TCA MAKES FINAL PREPARATIONS FOR JET AGE

R. C. A. F.
STATION LIBRARY
Tranton, - Ont.

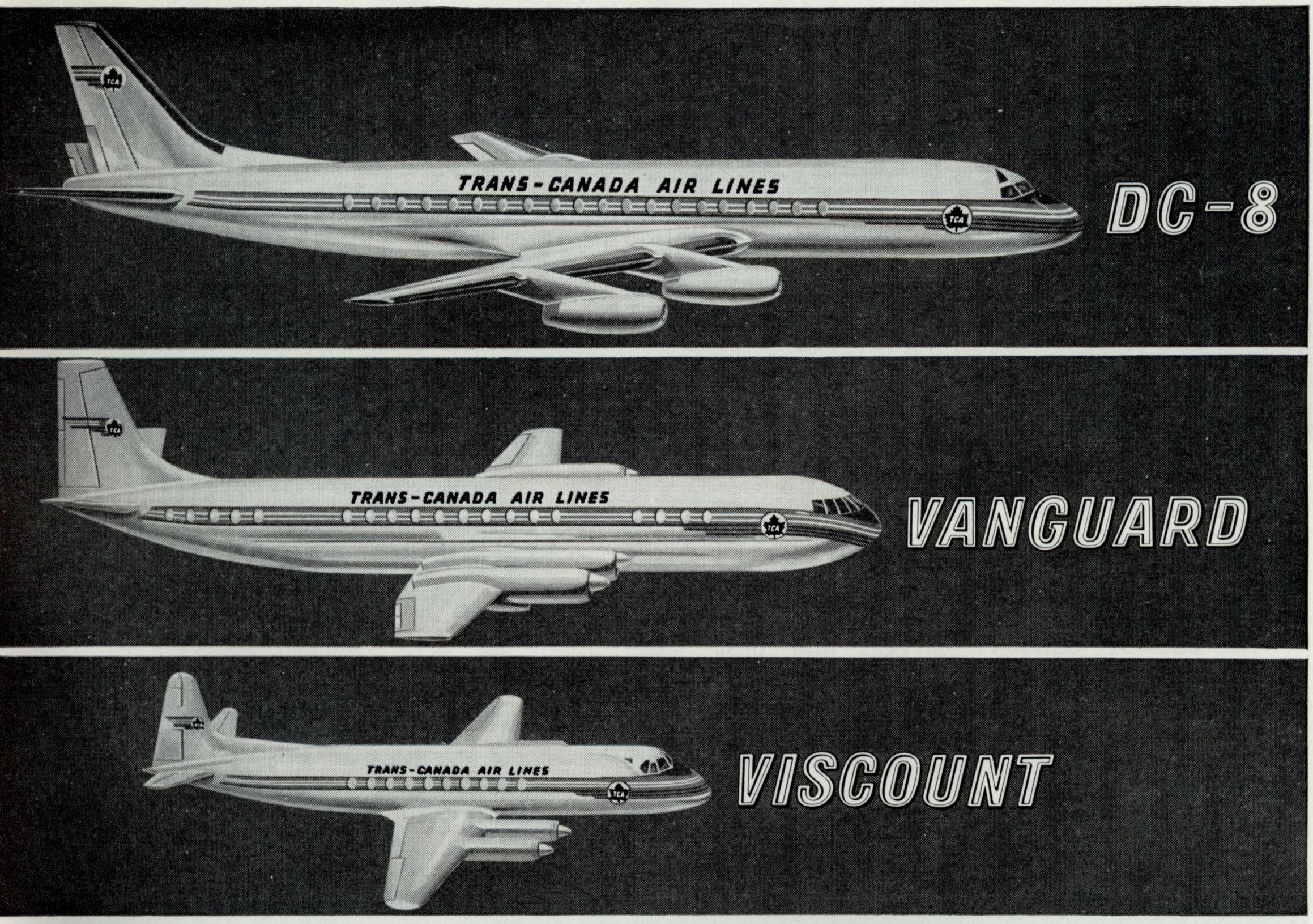
As Canada marks the 50th Anniversary of Flight in the Commonwealth, TCA continues to play a major role in Canadian aviation. 28 years after the "Silver Dart" made its first flight at Baddeck, N.S., TCA flew its first passenger service. The aircraft was a 10-seater Lockheed, the route mileage, from Vancouver to Seattle, 122.

From this modest beginning, the story has been one of steady progress. Today, TCA flies over 32,000 miles of world air routes, serving 59 communities.

But the most striking development is still to come. Next year, TCA will introduce 127-seater, 550 m.p.h. DC8 jetliners, powered by Rolls-Royce Conway turbo-jet engines. They will cut flying times on trans-Continental and trans-Atlantic services by almost half.

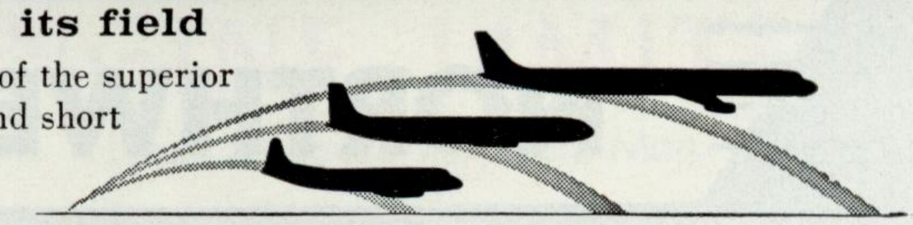
Shortly after, new turbo-prop Vickers Vanguards will go into service. Seating up to 96 passengers and flying at 415 m.p.h., the Vanguards will bring new speed and comfort to TCA's high density inter-city and Southern routes.

With these two new types, and the now famous Viscounts, TCA will become the first inter-Continental airline in the world to operate an all-turbine fleet. Amazing as the first fifty years of flight in Canada have been, the second half century may well bring equally dramatic advances.



Three fine aircraft... each ahead in its field

In the Vanguard and Viscount, advantage will be taken of the superior operating qualities of turbo-prop aircraft over medium and short distances. The turbo-jet DC-8, with its higher speed, will realize its full potential on TCA's long distance routes.



TRANS-CANADA AIR LINES *one of the world's great airlines*

ON THE PRAIRIE, ON THE PACIFIC COAST



For minor to major repairs — for complete overhauls — look to Northwest Industries — to Edmonton on the prairie and to Vancouver on the Pacific Coast.
Northwest Industries — first in Edmonton with one of Canada's largest and best equipped precision instrument laboratories.
Now these facilities are available to Pacific Coast operators through Northwest's newly-acquired facilities at the Vancouver International Airport.

SHELL

SHELL AVIATION DEALER IN EDMONTON

- **repairs**
- **overhauls**
- **instruments**
- **electronics**
- **custom interiors**

Every Type of Aircraft Service: overhaul, modification, maintenance or repair

NORTHWEST INDUSTRIES
LIMITED

Municipal Airport • Edmonton, Alberta

International Airport • Vancouver, B.C.

"Serving Commercial, Business and Private Aircraft Operators"

Aircraft Engines are our business!



About our engine overhaul resources . . .

Backed by the resources of Canada's most complete parts stores . . . the most modern up-to-date test and overhaul equipment obtainable . . . and a complete supply of replacement parts and accessories, S.A.E. has set an unparalleled standard in aircraft engine overhaul with operators across Canada. Today S.A.E. overhauls more types of engines than any other Canadian aircraft engine overhaul facility and, as a result, have become skilled in every phase of engine rebuilding. Mechanics are sent for training to aircraft manufacturing plants to keep abreast of developments in this fast-moving industry. Every engine that enters S.A.E. receives immediate attention and is "quality-controlled" through all phases of its overhaul to assure operators of the utmost in specialized service . . . and delivery timed to meet their specific operating problems.

Another reason why we say, "aircraft engines are *our* business!"

STANDARD AERO ENGINE LIMITED

Head Office: Winnipeg, Man.

Branch Offices: Edmonton and Vancouver

CANADA'S MOST COMPLETE AIRCRAFT ENGINE SERVICE ORGANIZATION



Courtesy and Copyright The Bell Family and National Geographic Society

HISTORICAL BEGINNING OF CANADA–U.S.A. TEAMWORK

Canada's first powered flight made 50 years ago by the Silver Dart marked the beginning of close cross-the-border teamwork between Canada and the United States. This teamwork over the past half century has achieved many 'firsts' in aviation history important to both countries.

McCurdy's Silver Dart was the remarkable achievement of that first Canadian-U.S. team, Alexander Graham Bell's Aerial Experiment Association. Designed and built in the United States by Canadian John A. D. McCurdy (pictured above, wearing cap, in the Silver Dart with the U.S.A.'s Glenn Curtiss, designer of the plane's water-cooled engine), this historical aircraft was shipped to Canada to make history at Baddeck, Nova Scotia, in 1909: the first flight in the British Commonwealth made by a British subject (McCurdy).

Since that time, cross-the-border cooperation between the two countries has played an important part in Canada's contribution to aeronautical progress. The Garrett Manufacturing Corporation of Canada, Limited, as a major supplier of equipment for most of Canada's aircraft, is proud of this contribution. With complete design, laboratory and manufacturing facilities in both Canada and the United States, The Garrett Corporation is developing many types of equipment for specific requirements of both countries and looks forward with greater zeal than ever before to contributing to the advancement of flight on both sides of the border.

The Garrett Manufacturing Corporation of Canada, Ltd.

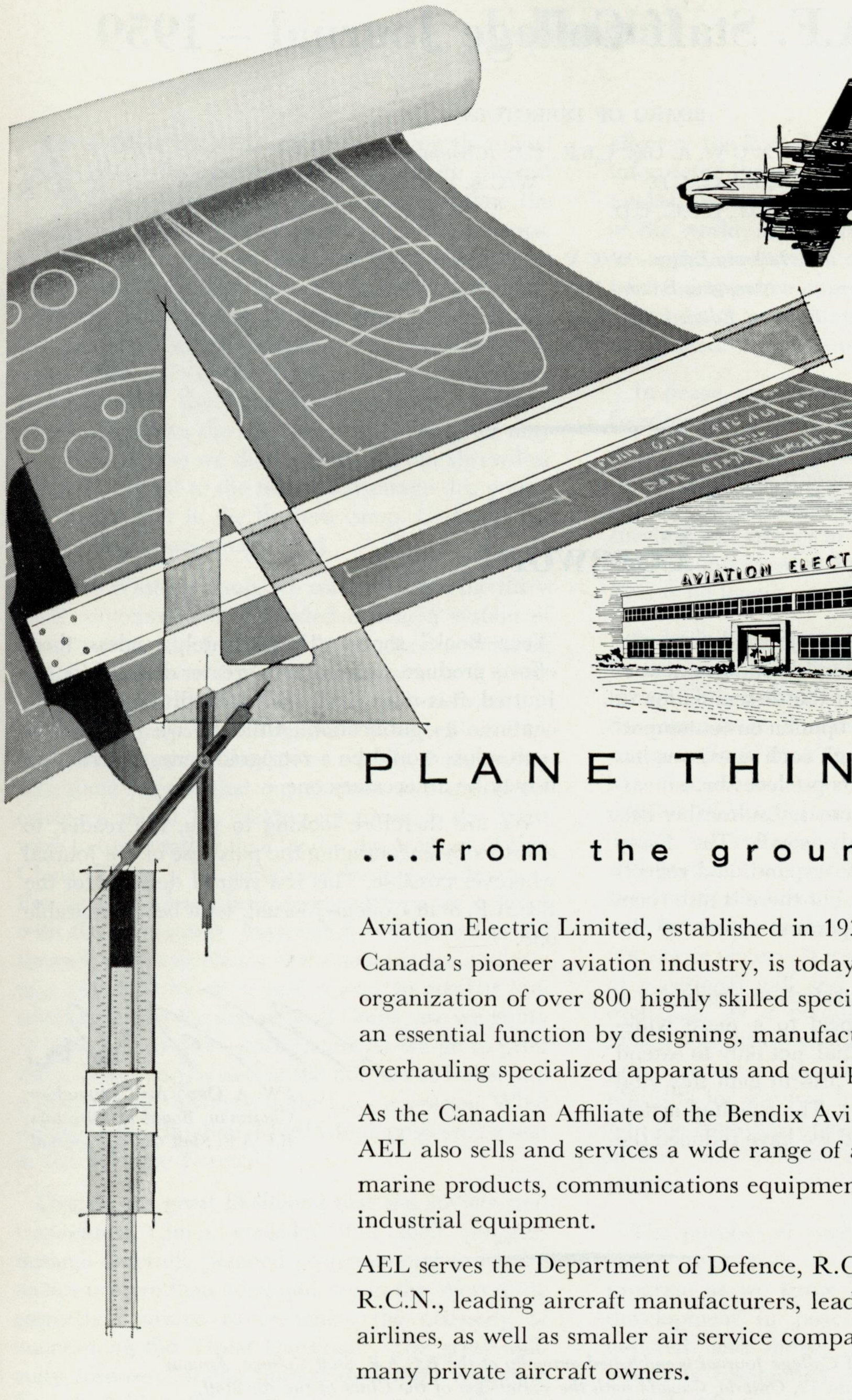
A Subsidiary of THE GARRETT CORPORATION

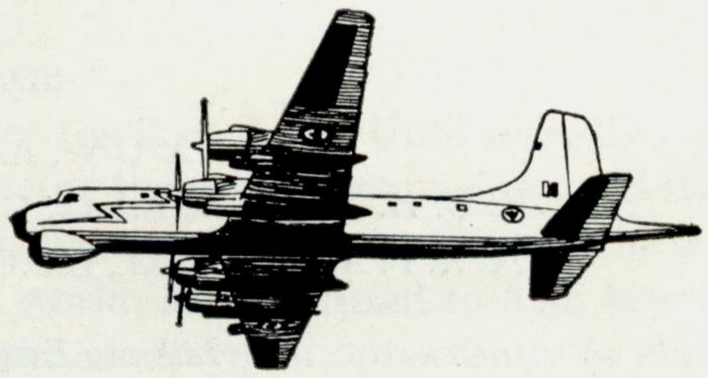
4 RACINE ROAD, REXDALE, ONTARIO

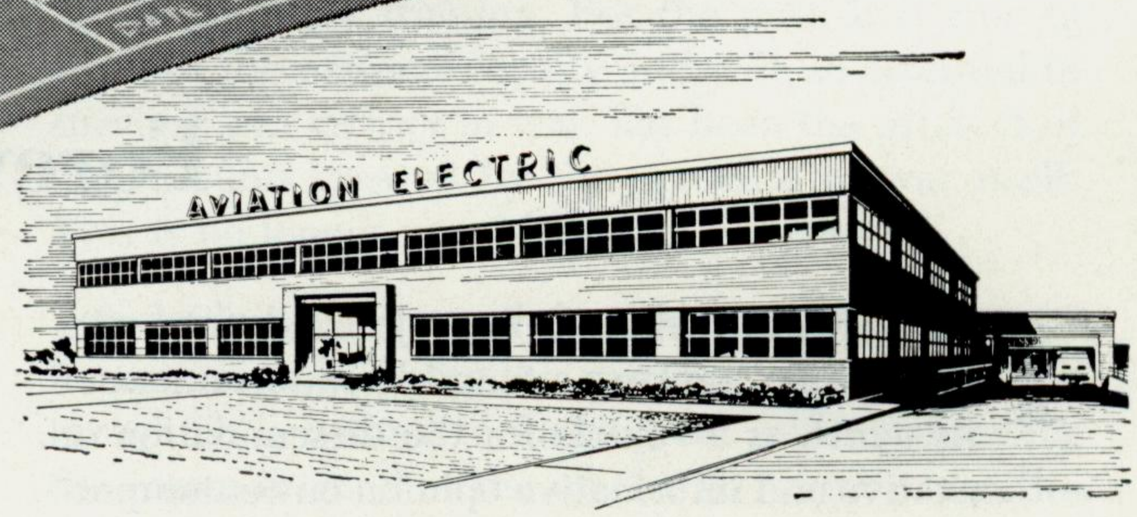
1255 LAIRD BLVD., MONTREAL 16, QUEBEC

REFRIGERATION SYSTEMS • PNEUMATIC VALVES AND CONTROLS • TEMPERATURE CONTROLS • CABIN AIR COMPRESSORS
TURBINE MOTORS • GAS TURBINE ENGINES • AIR TURBINE STARTERS • CABIN PRESSURE CONTROLS • HEAT TRANSFER
EQUIPMENT • ELECTRO-MECHANICAL EQUIPMENT • ELECTRONIC COMPUTERS AND CONTROLS • INSTRUMENTS • SURVIVAL EQUIPMENT

PIONEERING IN PRECISION ENGINEERING







PLANE THINKING

...from the ground up

Aviation Electric Limited, established in 1931 to serve Canada's pioneer aviation industry, is today a diversified organization of over 800 highly skilled specialists who fulfill an essential function by designing, manufacturing and overhauling specialized apparatus and equipment.

As the Canadian Affiliate of the Bendix Aviation Corporation, AEL also sells and services a wide range of aircraft and marine products, communications equipment, and specialized industrial equipment.

AEL serves the Department of Defence, R.C.A.F., R.C.N., leading aircraft manufacturers, leading airlines, as well as smaller air service companies and many private aircraft owners.

CANADIAN Bendix AVIATION CORPORATION AFFILIATE

AVIATION ELECTRIC LIMITED

200 Laurentien Blvd., Montreal, P.Q.

Branch Plant: Aviation Electric Pacific Limited, Vancouver Airport, Vancouver, B.C.

The R.C.A.F. Staff College Journal – 1959

BOARD OF DIRECTORS

A/C W. A. Orr, C.B.E., C.D. *(Chairman)*

G/C G. H. Newsome, A.F.C., C.D. — W/C A. H. Middleton, A.F.C., C.D.

W/C A. F. Avant, D.S.O., D.F.C., C.D. — W/C G. A. Lee, A.F.C., C.D.

Literary Editor - W/C V. C. H. Stuart C.D.

Managing Editor - W/C M. Davies, C.D.

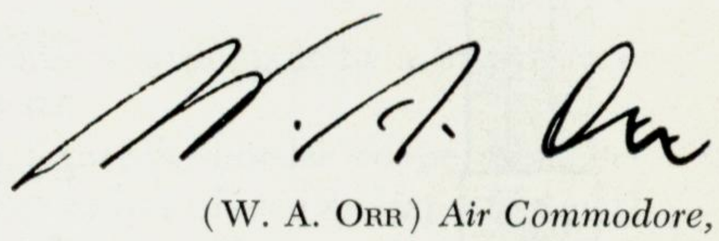
Assistant Editor - S/L R. T. Heaslip, A.F.C., C.D.

Foreword

THE R.C.A.F. Staff College Journal enters its fourth year, seeking a tangible endorsement of its worth as a vehicle for the dissemination of authoritative and informative opinion on contemporary military problems. Although each new issue has reflected improvements over its predecessor, a measure of its worth in terms of increased subscriber lists has remained disappointingly small. The Essay Contest entry list continues to expand, and reflects increasing quality and scope, but there is also room for improvement in this important aspect of the Journal's endeavours.

This year we have concentrated on producing a publication with greater appeal to a more widespread group of reader potential, not only to extend its benefits further afield but also to gain this vital increase in subscriber support. The solicited article section has been enlarged, and we have reduced the "Year Book" aspect. Unfortunately, unless these efforts produce evidence of a greater demand for the Journal, it is most likely that we will not be able to continue its publication. Although we believe that such a loss would be a retrograde one, nevertheless it may be a necessary one.

We are therefore looking to you, the reader, to assist us by encouraging the purchase of the Journal wherever possible. This is a year of decision for the R.C.A.F. Staff College Journal: let it be a favourable one.



(W. A. Orr) *Air Commodore,*
Chairman, Board of Directors,
R.C.A.F. Staff College Journal.

The R.C.A.F. Staff College Journal is published annually at the R.C.A.F. Staff College, Armour Heights, Toronto 12, Ontario, Canada with the permission of the Chief of the Air Staff.
The aim of the Journal is to encourage serious study of topics of professional military interest.
The ideas expressed in the Journal are those of the writers and do not necessarily reflect official policy.

All rights reserved.

Price — one dollar by subscription, cheques payable to the R.C.A.F. Staff College Journal.

PRINTED BY ROLPH-CLARK-STONE, LTD., TORONTO.

Editorial

AS THE JOURNAL completes its fourth annual issue, the editorial staff notes with interest the great change in emphasis within the sphere of each of the two opposing military camps. On the Soviet side we have perhaps the greatest peace offensive in the history of the surge of communism. Although this must be part of the overall plan for eventual Soviet domination of the Western community, we wonder whether it also represents a recognition of the Chinese Communist potential. There is merit to the suggestion that the latter may be true, and if so we should assemble our shrewdest minds to exploit to the fullest advantage this potential power split in the Eastern camp. Certainly we cannot let it pass unattended.

In the Western camp, we continue with the three (and sometimes four) headed coach: a system of organization which has yet to produce a winning club in any contest. This is the acknowledged greatest weakness of the Western front, and one which is obviously being and will continue to be exploited by the masterminds of the Soviet regime. Recognizing this, some suggest that our chances of peaceful coexistence might be greatly enhanced if the West were to foster rather than hinder the progress of Red China. There is an additional basic consideration. For years we have been tempted to sever contact with the communist. Fortunately, we have learned through hard experience that one must see and talk to a potential enemy if one is ever to combat him successfully. In the case of Red China, are we guilty of ignoring our past experiences? As we go to print she is addressing herself to the borders of India, and is undoubtedly involved in the Laos operation. What would be the situation if Red China possessed a seat in the Security Council?

Despite the great likelihood that the Soviets, and Communist China, consider that their progress through carefully planned economic and brush-fire tactics is more than adequate, we in the West quite correctly continue to recognize the necessity of maintaining the "Great Deterrent". The great difficulty foreseen for the immediate future will stem from the lulling effect of the very persuasive Khrushchev, a a time when those responsible for allocation of defence dollars and indeed influential members of the armed forces themselves, are recognizing the possibilities of surviving a nuclear exchange. In the past we have tended to accept the *fait accompli* effect of the first phase. Until recently many people interpreted the use of first nuclear, and then thermonuclear, weapons as the path of doom and the end of the world; some refused to look beyond. Today, we appear to have an opportunity to end this fatalistic and negative approach to the problem, but the demands of exploiting this opportunity must be recognized. But here we must be cautious.

In peace, man does not like to be deprived of his freedom to compete, particularly the Western man; nor does he enjoy the rigors of vigorous and demanding disciplinary training. For the past, it is true to say that the national loyalty and will, so essential to survival and victory in war, has been the product of the stimulus created by the presence of war itself. This is no longer possible.

In both great wars of the 20th Century there has been time to generate the required national character which is willing to make great self-sacrifices for the common good of the whole. In recent years, the compression of time (minutes in the case of ICBMs) has forced recognition of the "in-being" force capable of waging nuclear war on a global scale. Today, we are again realizing that mobilization is still pertinent to war but that it now comes *after* survival. *If* the West is attacked, the retaliatory force will inevitably be launched, but this in itself does not assure victory. It is surely the presence, in peace, of a national *will* and *means* to survive a nuclear exchange, as a complement of offensive power, which will assure victory and *may* well become the prime factor in the deterrent formula. This prerequisite for survival forces the civilian community into the front-line operation in peacetime and could involve an unheralded "preparedness" training program.

The purpose of such a program would be more subtle than that of a standard passive defence program as we know it today, for it includes the development in peacetime of a well-disciplined national, and indeed international, civilian force which is community and national minded in its attitude toward survival; is prepared to plan, support, and implement, not tomorrow but today, the physical measures required; and will accept the personal inconveniences and discomforts which are inevitably associated with the repetitious practices of the disciplinary and organization training, so

essential to the effective response of the survival force to a "real" warning.

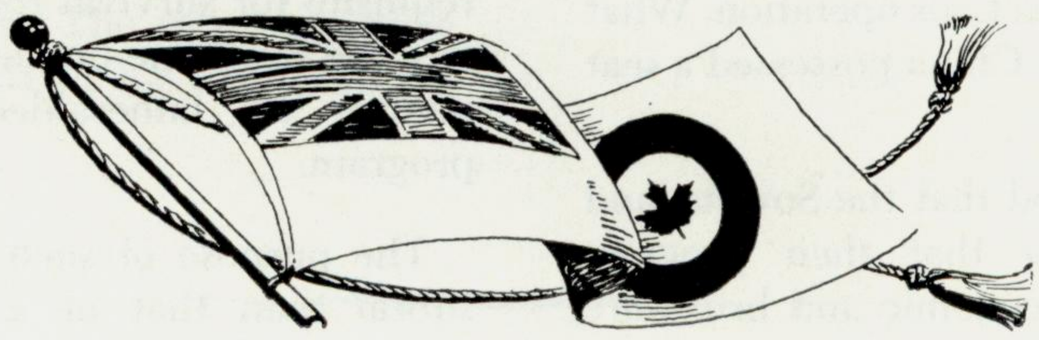
But is the above possible or practicable? To change the attitude of the modern, Western man (which we must do if the survival factor is to be of some consequence) is a very complex affair, particularly within a peaceful environment where the emphasis on the 'rights of the individual' is supreme, where the competitive approach is rife, and where sovereignty has become a planner's nightmare. Can we obtain the mass understanding and cooperation which is obviously the key to the successful fruition of any survival program? There are many who will say that it is impossible. If so, where do we go? Unless the West sustains an invulnerable deterrent force which assures virtual destruction of any opposing society, there may always be the risk of miscalculation and thus just cause for preparedness precautions; however, *since the compression of warning time increases the possibility of misjudgment and decreases the opportunity to seek cover,* elaborate and costly passive survival organization and facilities may be impractical, particularly if the financing involved is to be at the expense of achieving a truly invulnerable and all-destructive deterrent. But, what is an invulnerable retaliation force, and is it possible to obtain it? Can *one* nation be responsible for the very existence of this force and also meet the challenge on the economic front? Here are paradoxes of frightening proportions when examined carefully.

The task of survival is indeed complex and is not for the uneducated to resolve. Any effective resolution is drastic both in its impact on the economy of a nation and in its requirements for national understanding, discipline, and self-sacrifice. *Thus the key to survival is surely, first and foremost, education.* This is the greatest challenge of our times.

Thus it becomes incumbent upon all who can recognize at least the various shades of complexity within the survival problem, to encourage and, if appropriate, to assist others to seek a greater knowledge of the causes and effects of mass destruction weapons, and the speeds and methods of delivery; of the compression of time and its singular importance today in the defence picture; of the risk of miscalculation; of the need for greater national and international unity and discipline *in time of peace*; of the inter-relationship and interdependence of both international, national, and local government and military forces; all this to permit a more intelligent appreciation of the problems associated with survival, and this includes disarmament, which can be so misunderstood.

An attempt has been made to highlight two major problem areas in the East-West conflict. In accordance with current Journal editorial policy, this attempt has posed what are hoped to be stimulating questions. By so doing, and by publishing related thought-provoking articles by well-established authorities, we believe that we are making a useful contribution towards enhancing the degree of pertinent professional knowledge and public exchange of intelligent opinion on the part of responsible defence minded citizens and servicemen.

V. C. H. S.



"Democracy without education is hypocrisy without limitation . . . Democracy requires breeding."

— Gen. Iskander Mirza. *President of Pakistan.*

National Strategy and the Armed Services

AIR VICE-MARSHAL E. J. KINGSTON-McCLOUGHRY

Air Vice-Marshal E. J. Kingston-McCloughry, C.B., C.B.E., D.S.O., D.F.C., R.A.F. (Retired), is a widely-known authority on contemporary military affairs. He has written numerous articles on strategy and air operations, and is author of the books "Winged Warfare" (1937), "War in Three Dimensions" (1949), "The Direction of War" (1955), and "Global Strategy" (1957).

National Strategy Today

PERHAPS the most ironical aspect of all human effort and activity is that it can be summed up in a few terse and well chosen generalisations. This paradox whereby the truth is laid bare and yet remains unyielding and obstinate in its essential facets is the most frustrating of all obstacles to its successful exploitation. Despite their fairly large margin of error, generalisations have a peculiar universal character which gives them a compelling conviction.

In the realm of defence policy and national strategy, however, the defects of this tendency are more readily apparent; and we are forced to seek out the solution of our defence dilemma in the detail and particularisation of national and service strategy. Unless we do have a clear idea of our allied and national resources and commitments we cannot hope to evolve reliable national and service strategies. It is a mistake to have any preconceived ideas about what will happen in diplomacy or war; we can be prepared for certain likelihoods but that is all: the possibilities of war have moved a long way from those of pre-1939; and current strategy finds the concepts of war today troublesome to harness. The prime difficulty in adjustment lies in the fact that our armed services are national institutions; and being institutions much of their national appeal lies in their dogma, ritual and ceremonial. They are, not unnaturally, the breeding ground of preconceived notions about the nature of war and strategy.

The Western difficulty of constantly holding Russian ambitions in check resolves itself in many minds into two choices which emerge as alternative national (and allied) policies. First there is the decision to continue the policy followed by the West since 1947 to resist successive Russian moves in the European and international arena, and to build up mutual protection in a powerful alliance. The second trend of thought which is gaining a certain amount of credence and popularity, even in the United States, is to work out methods of bridging the gulf between the Russian and Western ideologies and to restore amity in all departments of national activity.

Unfortunately, the choice for the Western countries is not quite so definite and is not strictly black and white. It is true that the West are free to explore the possibilities of increased co-operation with Russia but the result must inevitably be a negative one unless Russia has a genuine desire to co-operate. The odd thing is, that in this as in other international affairs, Russia has the power to give or withhold her smile, and thus in a vital sense secures the initiative and the bargaining side of the counter.

National strategy is always complicated but the British national strategy is the most complicated of all because of the global responsibilities involved. Not only have we to provide for the defence of the United Kingdom as the citadel of the Commonwealth but also contribute to the defence of our overseas interests as a whole. It is necessary to dovetail this strategy into the separate strategies of the respective Dominions and Allies, each conscious and perhaps jealous of her own sovereign power. Clearly, the strength of British strategy must vary according to the overall agreement and co-ordination between the separate nations of the Commonwealth. Obviously this cohesion is itself affected by the spontaneous and whole-hearted agreement or the serious differences and disagreements which may arise.

It is scarcely possible, then, to create a national strategy in isolation: the modern world has become much too small for that. National strategy is the expression in terms of the resources available, in science and technology, men and material, of the national defence policy and of each nation's ability to contribute to Allied strategy. These factors are much too varied to explore in detail at this stage. What concerns us here is their ultimate effect on the armed forces and their strategies.

The two main facets of British defence policy at present are as follows:

(a) To deter the outbreak of global war and to

pursue a common policy with her allies against all aggression.

(b) To defend the Commonwealth as a whole and any protected colonies against local attack, and if necessary to undertake local operations in overseas emergencies.

In order to meet these demands the application of United Kingdom defence policy is fashioned with regard to financial, economic, Commonwealth and Allied factors, together with other current and relevant national and political considerations.

These basic defence policy requirements demand the following conditions: the existence of the deterrent of nuclear weapons and the effectiveness of the forces to be used should global war occur. In conjunction with our Allies, mainly the United States, this means a contribution to the western stockpile of nuclear weapons and the means of delivering them on the heartland of the aggressor without delay. It also means the maintenance of NATO and other allied forces against the possible outbreak of limited war and the adequate use of such forces if hostilities should break out.

With regard to the possibility of local and limited war, defence policy requirements can be outlined as follows:

(a) Defence of strategic bases and world communications of importance to the Commonwealth, or the Allies as appropriate, by naval, land and air forces. The strategic and tactical value of a base is related to its being situated in the midst of a friendly, or at least non-hostile, population. Ballistic rockets, nuclear-powered ships and submarines, long-range bombers, fighters, air transport and air refuelling all diminish the former reliance on stations and bases on foreign soil. With such assets the tasks of commando and other fire-brigade land forces in local conflicts should be greatly facilitated.

(b) The provision of Commonwealth and Allied mobile strategic reserves of land, air and naval forces for immediate deployment wherever required, either as a deterrent, or as forces to deal with overt aggression or subversion. These are simply the military corollary of the political, economic and social aspects of the cold war exigency.

Unfortunately these requirements do not of themselves contain any clear and distinct parameters which will facilitate any simple definition or allocation of roles for the three services and civil defence. Traditionally, and even after the advent of air power, the roles of the services were comparatively simple and straightforward. Not unnaturally each service takes more notice of an enemy threat which appears to menace their own field of activity, and they also tend to want something bigger and better with which to counter the enemy threat.

The allocation of service roles is made more difficult by reason of the following factors. There is first the importance of the historical identity of each service. There is also the need to co-ordinate forces structures and roles with those of other parts of the Commonwealth and Allied armed forces. Primary and secondary roles will be determined by the category of war which transpires. The terms primary and secondary are not constant in this relation since the same roles could be primary or secondary according to the need and the conflict. The great cost of modern forces and the need for economy make it imperative to avoid duplication or overlapping of service roles.

Land Forces

The definition and determination of service roles are of very great importance in national strategy since they form the basis of the workability of that strategy. In brief the roles of the land forces should be considered in this light:

(a) Our contribution to the deterrent to global war.

(b) Our land force tasks (including those of commandos) in local and limited wars which are primarily of a national rather than an allied character.

(c) Support to the home front in event of global or total war.

(d) Our general contribution to the allied land force in global war.

The biggest contribution our army can make to the deterrent to total war is, without question, its place supported by tactical air forces in NATO. In this role it still plays an important part in securing some depth for manoeuvre and the air defence of Western Europe. At the same time our army's contribution to NATO peacetime forces not only helps to restrain communist local aggression, but also encourages the remaining free countries in Europe to resist frontier aggression or internal subversion.

There is no doubt that should the deterrent fail and total war occur any army based on such a pattern would be well suited to make an effective contribution to our national and allied strategies in waging total war. It is fairly evident too that an army armed with tactical atomic weapons and deadly atomic by-products, and supported by tactical air forces with nuclear weapons, can no longer be conceived in an entirely conventional pattern.

The new weapons bring a completely new concept of war readiness to the land forces. Fire power, the most potent of all influences in war, together with mobility and communications, has always had the most profound effect on the formulation of land strategy. Nuclear weapons have so intensified the effect of fire power that in total war they could transform the role of the army. From being a fighting machine trained to dominate in the field it may become the force necessary to preserve the Home Front and to establish some system of survival in event of nuclear attack.

The fire-power likely to be used in the local type of war is of course very much lighter than would be the case in limited land war against another first class power. In the local conflict fire-power would often depend on air and naval support. Where the base of operations might be limited to aircraft carriers or submarine carriers, such air and naval support implies the ample provision of vertical take-off and short-run aircraft.

Whatever the general strategical and tactical mobile needs of the Western powers may be for war against other first class powers, the United Kingdom supported by the other Commonwealth countries has a very special problem of making forces available or being capable of engaging in guerilla or local warfare anywhere in the world where our national or Commonwealth interests may be challenged. The requirements of land forces fighting against a first class power, and those engaged in local overseas warfare, are, to an appreciable extent common to both. Yet there are very essential differences. In particular, there must be an adequate air and sea transport properly organised at immediate readiness. This is absolutely essential so that our land forces and such supporting forces as are appropriate may be moved from a central reserve, or from one base to another, wherever they might be required, East or West about.

Whatever the fire-power or air and maritime support available, man-power continues to be the all-important factor. So far as the Western countries are concerned the problem of man-power is apt to become a party political issue rather than a purely national concern. Indeed, the Western nations basically now shape their military strength on weapons, and are reluctant to make the sacrifices necessary to provide adequate man-power even on a relatively small scale. Unhappily, this places the Western powers at a certain disadvantage, and the communist powers can, and do, arrange things differently. For some tasks the Western European countries might yet be forced to adopt citizen armies which have been so successful in Australia and Switzerland.

Maritime Forces

Fundamentally, maritime strategy depends on the geographical situation and the economic circumstances of the belligerents as well as the weapons and technical devices of sea power. The United Kingdom, the core of the Commonwealth, is still a sea-power and must continue to remain so, and her peculiar geographical situation in large measure determines the roles and thus the strategy of British maritime forces. These can be outlined briefly as follows:

(a) The provision of our maritime contribution to the deterrent to global war – in particular, the maritime nuclear offensive forces.
(b) The provision of our maritime contribution (including marine commandos) to local and limited wars: and especially to the protection of our merchant shipping, transportation and support of our land and air forces.
(c) The support of the home front in event of total war.
(d) A general contribution in total war.

Towards these ends our maritime forces will be engaged using modern weapons, aircraft, carriers and submarines and with patterns of naval strategy and tactics quite different from the conventional. The large nuclear-powered submarine is also likely to have a very great effect on maritime warfare.

The offensive character of our maritime forces is firmly illustrated by the aircraft carrier and the new submarine. Our maritime targets, however, lend themselves admirably to guided missiles defence although it is true that the great unknown in regard to our maritime problems is the resultant balance between the offensive value of future guided bombs, missiles and torpedoes against naval targets; and the defensive value of our future guided missiles and the electronic devices which might be used to counter them. Among other developments radar has a primary significance in maritime warfare as a result of the extension of reconnaissance in comparison with the former visual range. This enables the whole sea to be searched in a relatively short time and with a limited force. Radar has in fact revolutionised the problem of finding enemy naval and merchant ships. Tactical superiority will certainly play a dominating part in naval warfare and the new weapons will influence this immensely. It is important that an alert attitude is maintained when deciding development priorities in the future shape of our naval forces because these decisions are most critical.

The new weapons also affect the overseas bases

and, like the fleets, their future vulnerability and usefulness depend very much on the outcome of the relative efficacy of offensive weapons such as guided bombs and ballistic rockets as well as the defensive guided missiles used to counter them. Overseas bases of limited area, as with warships themselves, are especially suited for guided missile defence: such warship defence can have great power against bombers. The implications of all these factors must be taken into account in the review of our naval bases and shipping facilities, and on an Allied rather than a national basis. Our reallocation of naval disposition will follow accordingly.

Maritime forces have long had the role of bombarding enemy coast-lines and shore stations. The great destructive power of modern weapons, however, changes this secondary role into a primary role of great importance. Indeed for the first time maritime forces in the form of aircraft carriers with nuclear weapons, together with ballistic rocket and guided missile carriers, could play a leading part in a direct offensive against land forces and the home front.

Many naval leaders today are air-minded which is refreshing compared to the old sea-dog hangover on the importance and invincibility of warships. It is clear that air power has become the primary feature of maritime power, not only in its offensive role but in its traditional role of safeguarding the seas. Indeed, in many respects naval vessels are ancillaries, being no more than carriers of air power. It is true that naval vessels have always been the carriers of weapons of one sort or another, guns, torpedoes and mines, but aircraft and ballistic rockets, particularly for attack deep into enemy territory, bring with them a whole new range of problems in which air strategy and naval strategy merge and coalesce. Whatever the desires of the respective services, events have resulted in a closer and closer affiliation of maritime and air strategies so that today there is a vital interdependence of naval and air forces. Clearly, however, the time has come for the complementary functions of the two strategies to be fused more closely, both in respect of the traditional role of securing the sea communications and especially in the new role of offensive action.

There must be little doubt that there is a strong case for integrating the high direction of maritime and air strategies into something more positive than the present co-ordination of the two partisan attitudes at Chiefs of Staff level. Such integration would involve matters of intelligence, planning, operations, technical policy and operational requirements, if not the financial branches.

Air Forces

With regard to air forces it is as well to be quite clear at the outset what can be expected of air forces: what they can do, and, if this is not sacrilege, what they cannot do. Let us try to determine what the roles of our air forces should be within our national strategy:

(a) Initially, there is the contribution to the allied nuclear force and the means of delivering nuclear weapons in the deterrent against total war.

(b) The air force contribution in local and limited war – in particular air transport and air support to our land forces and shipping.

(c) The defence and support of the home fronts in event of total war.

(d) Our allied air force contribution in total war.

The Offensive

This is the most powerful and in a way the primary inherent facet of air power.

Certainly, our biggest contribution to the allied deterrent to total war is our Air Force together with our maritime offensive force both equipped with nuclear weapons and held in readiness for immediate action against pre-arranged target systems. These forces will also be the most effective forces against enemy home fronts should total war ever break out.

Whatever the manned and unmanned weapons of our bomber force, a substantial and highly efficient reconnaissance and pathfinder component will be essential: perhaps even more for the latter than for the former weapons. Primarily the offensive air forces of the future will be ballistic rockets with nuclear war-heads supplemented by high performance bombers using guided bombs also with nuclear war-heads which can be launched from a stand-off distance of several hundred or even a thousand miles.

The strategy of ballistic rockets promises to be simpler than bomber strategy. Subject to adequate knowledge of the target without resort to reconnaissance, the range of the rocket and its guidance accuracy are the factors which will dominate the strategy. The strategies will be no more than deciding the regions for the launching sites and obtaining the size of the stockpiles. In this respect, rocket-carrying ships and submarine rocket-carriers are likely to play an important role, at least until satisfactory long range rockets are produced. If and when air defences are evolved which can counter the ballistic rocket, then the direction of attack and reduction in range of operation will become still further factors in the strategy. The biggest problem

in the strategy of ballistic rockets is that of technical development and in deciding the characteristics of the weapon. It would be too late if it was not until the outbreak of war that the Western nations found that the enemy had greatly superior weapons.

Air Support

Certainly, in local war and to a great extent in limited war the main offensive mass destruction weapons are not suited for the air support role. In these categories of war the roles of the air forces are, in general, the establishment of air superiority over and adjoining the theatre of land forces and the enemy approaches to it: the provision of air support in varying degrees to our own land forces in the forward areas against the enemy lines of communication and bases, according to the situation in these areas; and air transport, both strategic to move forces, weapons and equipments from one theatre to another, and tactical to give the forces mobility in this field.

Although modern aircraft have not only retained but greatly improved their suitability for the deterrent and total war, unfortunately operational aircraft are today less suited for the support role. This is the price of progress but developments are now providing other support devices such as tactical atomic weapons and guided missiles. While each of these weapons have a certain appropriateness for both total and local (or limited) war there can be no question that manned aircraft are more suitable for local and guerilla warfare.

Air Transport

The strategic use of air transport will be a major facet in the local and limited war exigencies. Though a vital support, it is of a different kind from operational air support. The tendency among many air force chiefs to be mesmerised by the spectacular possibilities of bombers has made air transport the cinderella of air forces. This is unquestionably a crucial problem and the British over-concentration on the provision of bombers to the detriment of air transport while depending so much on the United States strategic air command does seem unsound. Moreover, the United Kingdom air transport problem in recent years has developed and become urgent in terms of range and carrying capacity Westabout, since we can no longer depend entirely on the route through the Middle East.

A policy of development in British air transport could dovetail neatly into a programme and development of civil aircraft. It is scarcely surprising that events have forced the United Kingdom government to promote measures for the build-up of R.A.F. Transport Command to a much greater potential. The most inadequate air transport force at the time of Suez and the then hopeless potential of helicopter support to the army were not simply lack of military air potential, but a lack of air transport policy. What gives cause for concern is that the United Kingdom is not alone among the Western allies to neglect an adequate air transport policy.

Air Defence

Our fighter forces will also undergo radical changes as a result of the new weapons. Something nearer annihilation is essential for our survival in future warfare and the development of guided missiles gives some prospect of this. These defensive weapons, however, must possess great accuracy and destructive power which in the main will be determined by their war heads. No gun or cannon is likely to be sufficiently adequate under modern conditions in range, accuracy and killing power, so that air-to-air guided missiles will be essential for fighters. It should, however, be remembered that air-to-air guided missiles will probably bring high and low altitude limitations for some years to come, and everything possible should be done to reduce these limitations.

Ground-to-air guided missiles as a most superior replacement to medium and heavy anti-aircraft artillery, if not low-level artillery, will affect our present fighter force substantially with new operational concept. Such weapons will be highly lethal though they too will have their limitations one of the biggest of which is unquestionably the cost of stock-piling multiple centres. The shorter their range, the greater will be the number of centres to be stock-piled each with sufficient missiles to deal with the largest air attack which might pass within their range. The converse is also true: the greater the range the fewer stock-piling centres required, but on the other hand, the higher the effective altitude the more costly the missiles and their guidance.

The modern fighter and the new air defence guided missile has created a need for many changes in the organisation of our defence forces which still have to be explored thoroughly. For example, the relative merits will have to be decided on whether the air defence should consist of two separate divisions, one of fighters and the other of defensive guided missiles, both directly under an Air Defence Commander, or alternatively, whether each sector should have a complement of each of these weapons. In any event, the integration of the new missile type with the older fighter type of weapon and the increasing approach speed of the attack will bring changes in the Control and Reporting System, which has always been difficult, to gain adequate identifi-

cation, warning and co-ordination for those who are to control and command our defence weapons.

The strategy of defensive guided missiles promises to be simpler than that of fighter defences. The dominating factors will be the range and effective height of the missiles, and an adequate early warning system. Like ballistic rockets, perhaps the most difficult problem in the strategy of guided missile defence is the technical development, that is, in deciding the characteristics of the weapons which will prove them superior, at not too great a cost, to the enemy offensive weapons. At present it would seem that the greater the range the higher will be the minimum effective height below which anti-aircraft guns or some other form of weapon will be required.

The operational problems of this strategy will be no more than deciding where to site the missile centres and the size of the stockpile. Guided missile centres with adequate peacetime stockpiles will of course be expensive and not mobile, so that for some time at least, there is likely to be a mixture of guided missile and fighter aircraft in our defence systems, and this will call for good and positive tactical control.

Conclusions

In the past, the concept and application of strategy was oversimplified by isolating a separate and self-contained strategy for each of the fighting services, that is, for the navy, the army and the air force. This approach was founded on the idea that the war could be at sea, on the land or in the air, whereas such operations were and are only separate facets of war. It is true that in the short term sense sea and land battles did appear as wars, but in the long term the one always had its influence and repercussions on the other.

Today strategy must be considered as a national affair; and the military application of national defence policy can no longer be considered simply in the light of numerical and craft equations. There are, of course, different levels of strategy throughout the whole range of war and peacetime preparations for war. The difficulties of reconciling service strategies with national needs are translated to the nth degree when it becomes a question of reconciling national strategies with Commonwealth and Allied strategies.

Hitherto attention has been focussed on the differences between the services; differences, that is, of weapons or the spheres which provided their mobility; and less attention has been paid to those factors the three services have or should have in common:

(a) Function. (b) Structure. (c) Strategy.

In these three factors lies the answer to the perennial question: "who is to do what?" The outline above of the division of responsibility and roles may seem artificial and a negation of the argument that the services should be one and indivisible, at least in their approach to a national strategy. This however re-emphasises the fact that it is not the service which determines strategy, it is the function which matters. With the job defined, it is only a matter of deciding how, in what circumstances and by whom it should be done.

Weapons and mobility can no longer present the service differences they had in the past since all services have the various weapons and even the spheres of mobility in common. The years since 1945 have seen an extraordinary impetus in weapon research, more in fact than was the case after the relatively minor wars of the nineteenth century, or in spite of air power even after the First World War.

Should the deterrent fail events will come within the range of military strategy. We must maintain and lend conviction to the credibility of the deterrent, but the strategies must also ask, and find the answer quickly, what happens if the deterrent fails to prevent war? Unless we can see this with a reasonable amount of clarity then the deterrent will become less and less credible. It has already diminished in credibility over the past few years primarily because the use of nuclear weapons was not thoroughly explored in all its ramifications including their various uses by each of the services. The apparent time lag between the development of weapons and the formulation of a strategy which can not only use but *control* the new weapon systems has not been adequately bridged and thus continues to accentuate the apparent service differences.

Democracies, it seems, have come to regard war as absolute and initially try to avoid becoming involved, but once engaged they assign to war an absolute importance and a national value which tends to make compromise of any kind impossible. Limited or lesser wars for calculated gain (or even calculated security) make little or no appeal. The totalitarian states are very much more flexible and adept with regard to minor or limited wars. This tendency among the democracies to prepare or cast themselves into the ultimate conflict is the prime danger; and indeed we have faced Armageddon twice this century already. Civilisation may not be in a position to afford another.

The essence of the degree of war ranges round the war aim and thus the gradations of war aims. The major complication is that in the past, and certainly in the recent past, war aims were not defined or

made sufficiently clear when the war began. The difference in the scale of wars is that in lesser war the aim could be simply territorial, while in large scale war the aim is likely to be the changing of the form of government and way of life in the invaded country.

The history of war in recent times shows how international politics tend to get beyond control as war progresses but in the nuclear age the relaxation or dereliction of control could occur immediately when war is joined. This political awareness or cohesion is also particularly difficult to maintain among allies. The chief difficulty is the agreement of allies on a common aim in the pursuance of modern war. Allied unity and aims involve so many national and sectional interests that the resultant complex takes on a resemblance to the conflict of cold war: an internecine conflict where it has no right to exist. The final result is that once the common threat is dealt with there arises innumerable allied economic and commercial problems, many of them giving rise to feelings of extreme bitterness.

It has been pointed out that whereas with every new weapon evolved the development has been towards a greater and greater destructive power, the nuclear weapon, initially of unimagined destructive power, has in recent years developed in the reverse direction. This in itself suggests the ability to limit the destructive tendencies in war to get away from the fateful *absolute* attitude.

We must make the attempt to determine where, along the spectrum of international affairs, it is possible to arrest the drift towards extremes of violence. This limit or line is a parameter in events and not necessarily in territorial adventures, but it separates war of any kind and however limited, from the state of peace however strained that may be.

To be too insistent on not crossing this line ourselves might be disastrously self-defeating from a national or allied standpoint. Thus we must have a second point along this spectrum: that is the line which distinguishes conventional and nuclear war. It is here that tactical nuclear weapons may be used, and it is this fact which makes it much less likely for an aggressor to launch her land and naval forces against objectives for which she is aware we would not only fight but be prepared to put up the stakes.

Yet another distinction exists on this spectrum and that is between the use of tactical nuclear weapons and strategic nuclear weapons. This last is the final hurdle in the progression from peace to total war. Strategic nuclear weapons have prevented and must postpone indefinitely the pursuit of unlimited war objectives. By their very existence they neutralise the threat they contain and have the effect of a deterrent in storage from which they may never emerge. The Russian leaders are not prepared to pay the cost that would be inflicted on Russia in total war. International crises since 1947 seem to confirm that Russia does not want a shooting war, and is convinced that she can achieve her objectives by varying tactics, not necessarily military ones.

It is felt in some quarters that so long as strategic nuclear weapons are the deterrent to total war the temptation to resort to local or limited wars will also be sufficiently deterred lest they flare up into total proportions. If this is so then it makes the cold war all the more important. The cold war however is not a military problem though many people have persisted in viewing it as such, and confusing what might be the military sequel of the cold war with the cold war itself. Though it does in fact immensely influence possible strategy, the techniques to be used in this sphere are those of the politician, the diplomat, the psychologist, the economist, the propagandist, and the sociologist. The military strategist cannot ignore the cold war because any given situation at any time might be of the utmost importance to the success or failure of a national strategy.

It is imperative that we in the West should tackle these and related problems with some vigour. In the past, time seemed to be our ally but today time is neutral and power is diminished. The proposed reorganisation of both the British and United States Defence organisations in 1958 is an earnest of how vital a complete reorientation of service and national thinking is to strategy. The evolution of such reorganisation can only be gradual and not violent though it might be stepped up with some advantage.

However brief, and however inadequately expressed, this essay is an exposition of what must become in time, if it is not already evident, an essential approach to national strategy. The trend of international events and the pattern of human affairs at this juncture demands that we in the United Kingdom and North America, together with our allies, measure up to our strategic destiny. The principles of war have been variously defined, and as operational precepts may have a great deal to recommend them, but the true principles of war are strategic priorities. While events and circumstances will determine the kind of war or wars we may be called upon to fight, there is no doubt that the alacrity and intelligence with which we seek to resolve these problems will ensure our success.

Surprise and Blitzkrieg in Soviet Eyes[1]

DR. RAYMOND L. GARTHOFF

Dr. Raymond L. Garthoff received his A.B. degree in Russian History from Princeton University in 1948 and his M.A. and Ph.D. degrees in Soviet Studies from Yale University in 1949 and 1951. A specialist on Soviet military and political affairs, he has travelled in the U.S.S.R. and Poland, and has lectured extensively at various colleges throughout the United States in addition to most of the senior military schools. Since 1957 Dr. Garthoff has been a consultant on Soviet Affairs for the United States Department of the Army.

IN THE prewar period, the Soviet military doctrinal view of surprise was not of particular interest. Stalin had not yet laid claim to the title of military genius *par excellence,* nor had he uttered a dictum on the role of surprise. Moreover, nuclear weapons, guided missiles, supersonic aircraft, and intercontinental bombers did not yet exist.

The successful German surprise of the Soviet Union in June, 1941, led Stalin to declare that surprise, while important (indeed responsible for the then undeniable initial German gains), was a factor of transitory, temporary significance. This evaluation was not really at variance with the facts, as the war demonstrated. Stalin contrasted factors of transitory influence with what he termed "the permanently-operating factors," which, he said, "determine the fate and outcome of wars." These factors became the basic codification of Soviet military doctrine. Yet, despite the consideration of surprise as a transitory factor, Soviet doctrine never denied its importance and desirability. A number of statements in the Stalinist postwar period clearly restated the importance of surprise.[2]

In the fall of 1953, two articles in the authoritative Soviet General Staff journal *Military Thought* dealt briefly with the role of surprise. Major General Talensky, in September, stated:

> It is well known that the influence of surprise on the course of military operations can be significant. *But as a result of the correct actions of a commander, the effect of an enemy surprise attack can be to a greater or lesser degree paralyzed* by a system of measures, worked out by Soviet military science, in particular a system of operational and tactical security, and by high vigilance and combat preparedness of the troops, etc.

And on these measures to counteract attempts at strategic surprise, he mentioned further "measures of a political nature on an international scale, and also appropriate organization by states threatened by attack of an aggressor, by the system of organization of the troops, by preparation of the country for war, by well organized tactical and strategic air defense, by an able and vigilant intelligence service, and the like."[3] The October article was notable in that, for the first time in Soviet discussions, increased importance was attributed to surprise due to the nature of modern weapons.[4]

In the first months of 1954 several military writers reflected the new recognition of the increased importance of the factor of surprise in contemporary warfare.[5] But all these articles emphasized the fundamental decisiveness not of surprise, but of the so-called permanently-operating factors.[6] Thus, the period of late 1953 and early 1954 witnessed the introduction of a modified, but by no means sharply altered, doctrinal view of the significance of surprise in modern war. Surprise was recognized to have become more important — but *not* decisive — in the era of nuclear and even thermonuclear weapons. It is of interest that as early as 1953 thermonuclear weapons were specifically mentioned.

During 1954 the implications of the magnitude of destructiveness of the thermonuclear weapon impressed themselves further upon Soviet military men. In a collection of articles titled *Marxism-Leninism on War, the Army, and Military Science,* which went to press in early February, 1955, several statements originally published a year earlier were modified to raise still further the importance of surprise. An article by a Colonel Piatkin was amended to add that surprise is "one of the decisive conditions for achieving success . . . *even in the war*

as a whole."[7] Nonetheless, surprise was still said to be a transitory factor, and General Pukhovsky even inserted into a republished article a new statement that surprise attack "cannot cause a country which is attacked any serious harm if that country and its armed forces are always ready . . . "[8]

A debate over the laws of military science, which extended through 1954, did not include direct discussion of the role of surprise. One writer did, however, note that as a result of the increased importance of surprise: "To place one's stakes primarily or only on the temporary, transitory factors means to fall into adventurism. To place one's stakes only on the permanently-operating factors, ignoring the temporary but very important factors, means to be near-sighted."[9] While the importance of both "permanent" and "temporary" factors was affirmed, the penalty for gambling on the temporary factors was still presented as much greater: "Adventurism" is a mortal sin in Bolshevism: being "near-sighted" is by comparison a venial sin. Nonetheless, as we have observed, parallel with the published (but not public) debate over the laws of military science, the Soviet view on the role of surprise was undergoing modification.

A new departure in Soviet strategic thinking was initiated with the key article "On the Role of Surprise in Contemporary War," by Marshal of the Tank Troops Rotmistov, which appeared in *Military Thought* in February, 1955. This article, we now know, was so significant an innovation that the editors of *Military Thought* had refused at first to publish it. It is not positively known what led them to change their judgment and to publish the article, but it was probably the intervention of Marshal Zhukov at a secret high-level meeting in January, 1955, in which he urged new approaches to the study of military affairs.[10] The editors of *Military Thought* themselves, in the March 1955 editorial, admitted in self-criticism that they had "held up without basis" the publication of this article, "thus displaying a lack of the necessary boldness in raising *a new and timely question having important significance for a correct understanding of the character of contemporary war.*"[11]

Rotmistrov emphasized in his article the greatly increased importance of surprise in the nuclear era. He stated:

> Surprise attack with the employment of atomic and hydrogen weapons and other contemporary weapons now assumes new forms, and is capable of leading to significantly greater results than in the past war. One may frankly say that under the circumstances of the use of atomic and hydrogen weapons surprise is one of the decisive conditions for achievement of success, not only in battles and operations, but even in wars as a whole. *In certain cases surprise attack with the mass use of new weapons can provoke the quick collapse of a state whose capability for resistance is low* as a consequence of the basic failures of its social and economic structure, and also of an unfavorable geographic location.[12]

While Rotmistrov carried the argument on the increased importance of surprise further than had the military writers in 1953 and 1954, this was not the major and indeed novel feature of his discussion. He proceeded to discuss the consequences of the increased importance of surprise *for Soviet strategy,* and concluded that repulse of an attempted surprise attack was insufficient — that a "preemptive" or "forestalling" strike is necessary.[13] He explicitly distinguished the idea of a preemptive strike from "preventive war" against a hostile power. A preemptive strike in the Soviet concept is the last-hour seizure of the initiative (and surprise) from the enemy whom the Soviets know (presumably from intelligence sources) to be preparing for an imminent surprise attack.[14]

In establishing this concept of a preemptive strike, Marshal Rotmistrov apparently had opened a new operational consideration for Soviet war planning. Previously, the Soviets had presumably relied upon the alternative contingencies of offensive war plans or defensive repulse of the enemy's initial attack followed by implementation of offensive plans. The publication of Rotmistrov's article was not the only sign of the official acceptance of his view on the need under present conditions for preemptive actions if the enemy was preparing for an attack. The editorial of the same issue of *Military Thought* which contained his article (February, 1955) fully accepted and endorsed his position.[15]

Finally, the Chief of Staff of the Armed Forces, Marshal Sokolovsky, publicly repeated this view. While not mentioning intentions to prepare for the contingency of a preemptive strike, he repeated on February 23, 1955, almost word for word, the key passage in the editorial. And *Military Thought* stated again explicitly in its following issue: "We cannot ignore the lessons of history, and *we must always be ready for a preemptive action* against the craftiness of the aggressors."[16]

Beginning at this time, in early 1955, the theme of the new significance of surprise — though without disclosure of the preemptive strategy — received wide and public attention, though relatively few

statements have been made since 1955. However, this sharp decline in publicity was presumably related to political and propaganda purposes, and it does not reflect a doctrinal change. Those statements which do appear continue to express the positions decided upon in early 1955.

Among the Soviet military spokesmen noting the increased significance of surprise in war with modern weapons have been a number of marshals: Marshals of the Soviet Union Sokolovsky, Malinovsky, Vasilevsky, Konev, Bagramian, and Moskalenko, and Marshal of the Tank Troops Rotmistrov. It is, perhaps, of interest that the senior air force or navy officers have to this day not commented on the subject, although the military press of all services has noted the revised evaluation of surprise.

The Herald of the Air Fleet, organ of the Soviet air forces, has in the entire post-Stalin period contained but two brief discussions of surprise — both in the April, 1955, issue. These two articles were, however, the most explicit and detailed in commenting on the particular relevance of the increased role of surprise to strategic air attacks. One, the unsigned editorial article, stated:

> It is well known to all that the imperialists do not conceal their intentions to start a new war by means of blows with atomic and hydrogen weapons on the vitally important centers of our country and the countries of peoples' democracy (the Satellites), with the objective of knocking out in a few days our main industrial centers, paralyzing transport, and demoralizing the population. The lackeys of imperialism openly declare this aloud and in print. Therefore in contemporary circumstances, when new means of combat, high speed aviation and rocket technology, have been developed, *it is insufficient merely to be prepared and capable of answering blow for blow to the warmongers. We must deny the aggressor the element of surprise, not permitting ourselves to be caught unawares.*[17]

In the same issue, Colonel General (then Lieutenant General) of Aviation Braiko, Assistant to the Commander-in-Chief of the Air Force, declared:

> The military leaders of the United States and England openly declare that they propose to start a war with surprise blows from the air, employing atomic and hydrogen weapons against our vitally important centers in the deep rear, calculating to knock out in a few days the main industrial centers, paralyze transport, and demoralize the population . . . . the imperialist aggressors give first place to the factor of surprise. Of course, under contemporary conditions as a consequence of the appearance of weapons of great destructive force, the unheard of development of speedy aviation and jet and missile technology, the factor of *surprise can have still greater significance than before, if the corresponding (defensive) measures which are capable of liquidating its influence on the outcome of the struggle are not taken.*
>
> The duty of the soldiers of the Soviet air forces is to *deny to the aggressor the element of surprise, to not permit him to catch us unawares.* It is necessary for us to be *ready to nip in the very bud the scheming plans of the warmongers, if they dare to try to enter upon their fulfilment.* The most important condition for resolving this task is to be in a condition of constant combat readiness.[18]

The only public commentator who explicitly discussed the strategic threat was Marshal Bagramian (in May, 1955). His statement is of interest also because he referred quite clearly to the *deterrence* value of preparedness, the frustrating of any "desire" to launch a surprise attack.

> As we know from the history of warfare and of the military art, surprise in dealing a blow to an enemy secures certain advantages in warfare to the attacking side. At the present stage of the development of military affairs and technology, *the role of surprise grows even more, since an unexpected blow can be dealt* not only to troops deployed on the front but *also to strategic targets, and to important political and industrial centers located far from the front line.* Therefore the sacred *duty of every soldier is to nip in the bud any desire of the aggressors to carry out a surprise attack* on our Soviet Motherland.[19]

A number of other statements also emphasized the point that the military figures of the "imperialist" powers, in particular the United States, "ascribe to surprise a fundamental significance and make of it the *only* guarantee of victory in war" (in Marshal Rotmistrov's words). But, although "one must not underestimate the great harm that an attacking aggressor could deal" with nuclear and thermonuclear weapons, "the aggressor's reliance on surprise of attack on the countries of the socialist camp is faulty, and under the conditions of our vigilance it cannot bring the imperialists success, since the fate of wars is decided in the final analysis by the permanently-operating factors."[20] Thus, vigilance and preparedness for a forestalling blow is considered the antidote to a surprise thermonuclear attack.

The earlier cited references in the Air Forces' journal to the need "to deny the aggressor the element of surprise" were practically the only public hints at the Soviet conclusion on the importance of preemptive initial Soviet blows to be made if an enemy strike was clearly about to be launched. *Military Thought,* not publicly available, was however quite explicit in reiterating this view, and pointing to the practical problems in implementing a preemptive strategy: "The task is to work out seriously all sides of this question (of surprise) and above all to elaborate ways and *means of warning of* surprise attack by the enemy *and of the dealing to the enemy of preemptive blows on all levels* — strategic, operational, and tactical."[21]

Thus it is clear that the Soviets are seriously concerned with devising methods of dealing a preemptive strike. The most specific measure which has been indicated is simply absolute readiness to act as soon as the warning of impending enemy attack is received. This need for constant readiness has been featured in virtually all of the public statements on surprise in recent years, and it also was specifically given in each of the few non-public references to the need for preemptive action. The only statement in available issues of *Military Thought,* other than the article by Rotmistrov and the editorials earlier cited, appeared in May 1955 in an article by Army General (then Colonel General) Kurochkin, head of the Frunze Academy. He spoke of the necessity of maintaining "a condition of complete combat readiness, and of being able to deal preemptive blows on the enemy who is preparing for an attack. Only in this way can surprise attack be averted."[22] The editors further stated in the same issue that the "biggest mistake" of prewar Soviet military doctrine was that "it had not worked out the questions of averting a surprise attack."[23]

Several leading marshals then having a major degree of responsibility for the national defense claimed in the discussions of surprise in 1955 that the Soviet Union already then had the wherewithal to deal with any attempted surprise attack.[24]

All of the numerous Soviet statements on surprise have clearly referred to a *defensive* concern of the Soviets over the consequences of, and hence deterrence or if necessary "preempting" of, any possible American surprise attack. The only possible exception was a statement made by Lieutenant General Shatilov (then Deputy Head of the Chief Political Administration) in an address in May, 1955. General Shatilov noted the new significance of surprise, and the alleged imperialist proclivity for use of surprise nuclear attack. But then he departed from the usual pattern to state:

> Knowing the savage character of the aggressors, we cannot leave without attention the plans they are preparing. The Soviet Union threatens no one and does not intend to attack anyone, but those who think that they will meet with unpreparedness to repel aggression or passivity on our part will be bitterly disappointed. It would pay the immoderately war-like generals and admirals of the imperialist camp to remember that *atomic weapons as well as suddenness of action are double edged weapons,* and it is hardly sensible to jest with them.
>
> The Soviet people well remember and strictly observe the injunction of their great teacher, V. I. Lenin. He wrote: "Anyone would agree that an army which did not *prepare to employ every kind of weapon, and means of struggle, which the enemy had or might have had,* would be stupid and even criminal."[25]

General Shatilov averred, both in the passage cited and elsewhere in his speech, readiness "to repel" with "a crushing rebuff," and avowed explicitly that the Soviet Union "does not intend to attack anyone." It would appear that he intended by his description of surprise as a "doubled edged weapon" to threaten that under certain unstated circumstances (presumably and probably the "preemptive strike") the Soviet Union would itself take advantage of surprise.

In discussing the increased importance of surprise, and the need for constant combat readiness to avert surprise by a preemptive blow, the Soviets do not carry to an extreme their *own* reliance on surprise. While well aware of the great significance of surprise, the Soviets nonetheless state, in the words of Major General Pukhovsky, that "the use by an enemy of the factor of surprise cannot cause a country which is attacked any serious harm if that country and its armed forces are always ready to rebuff the enemy."[26] In this context it is clear that while aware of the greatly increased effectiveness of surprise, the Soviets do not regard the possibility of surprise itself as sufficient foundation to justify launching a war against a vigilant major opponent. Marshal Rotmistrov, the most vigorous proponent of the new significance of surprise, himself noted that while surprise may under certain conditions be necessary and even a decisive condition, it is never a *sufficient basis* for success. He stated, in his key article on the subject in February, 1955, in *Military Thought,* that: *"Surprise attack by itself still does not and cannot provide complete victory in war or an operation.* It only creates a condition which must be

skillfully exploited, developing the effect achieved by unexpectedness, or decisively parrying it if the enemy makes an attempt." Further he explicitly noted that the permanently-operating factors remained decisive. "While considering surprise as one of the most important conditions of achieving success and recognizing its ever growing role, it is necessary to note that this circumstance in no measure contradicts the thesis on the permanently-operating factors which decide the fate of wars. They continue in contemporary circumstances to have primary significance for achieving a complete victory over the enemy."[27] Similarly, in subsequent articles in *Red Star* and *The Military Herald* in 1955, Rotmistrov noted (after repeating that surprise with new weapons can under some circumstances be "one of the decisive conditions for achieving successes") that: "*Surprise cannot, however, yield a conclusive result, cannot bring victory, in a war with a serious and strong enemy.*"[28]

No Soviet statements have ever contradicted this view, and it is clearly the Soviet doctrinal position. Thus, for example, in late 1957 Marshal of Aviation Vershinin declared that: "a lightning annihilation of the Soviet Union by air strikes is excluded from possibility," because "our country is not an island or a mere point on the globe, but has enormous territory over which our vital resources are dispersed."[29] In the Soviet view, the importance of such geographical factors has, if anything, increased.

In an important statement in 1958, Major General Talensky – who, it will be recalled, was the first to have raised the reevaluation of surprise, in 1953 – declared that surprise attack is "characteristic of political and military adventurism." The *importance* of surprise, according to General Talensky, is that it is "a factor providing great advantages to the one who uses it, and permitting in some cases a certain degree of offsetting of other factors, which determine the outcome of a war . . . . " But it does not rank as one of these decisive factors nor ever, evidently, offset them entirely. Thus the view of the role of surprise in modern war adopted in 1954 and 1955 has since remained stable. To sum it up, let us cite one other key passage from General Talensky's recent discussion: "One cannot doubt that in the future, too, it will not be possible to base one's calculations on surprise attack alone. *In the nuclear era as before, the outcome of war will be decided by the whole complex of economic, social, political, and military factors, and not by the factor of surprise alone.*"[30]

In early 1958 the Soviet returned to the themes of preemptive attack and preventive war – this time in the public press. Several radio broadcasts and articles in *Red Star* and the civilian press protested violently that, in the words of Marshal Malinovsky: "Our peace-loving policy does not permit any kind of 'preventive war,' 'preemptive blows,' or 'surprise attack' about which some foreign slanderers are trumpeting."[31] The fact that the Minister of Defense himself saw fit to make such denials in *Pravda* bears witness to the high level attention now given to the public disavowals not only of preventive war but also of preemptive action. Why should the Soviets have felt compelled to issue public denials of preventive war, and especially of preemptive action?

The first reason for this stand was that several articles in the West had disclosed the 1955 Soviet statements cited earlier in our discussion. Lieutenant General Krasil'nikov, on *Radio Moscow*, attacked *US News and World Report*, saying: "The periodical employs unworthy methods. It uses out of context individual phrases and paragraphs from articles by Soviet military men which were published in the Soviet press in the last two or three years, distorts their meaning, and does not even stop at crass invention . . . . The periodical asserts that a doctrine of preventive war is now the basis of a new strategy of war."[32] There is validity in the Soviet objection that they had not endorsed the concept of preventive war, and were in some instances misquoted. But, as we have shown, they are falsifying when they deny at the same time their position on preemptive action to meet an opponent's attempt at surprise attack. This leads us to the second aspect of the recent Soviet denials.

Beginning in January, 1958, the Soviets opened a new campaign charging the U.S. with entertaining ideas of preventive war.[33] Many of these articles and broadcasts have singled out the secret Gaither Report as allegedly proposing preventive war. Yet, in the terms that one of them described the alleged recommendation of the Gaither Report – "going so far as to call for 'a military policy of striking an enemy before he makes an attack' . . . . "[34] – it counsels tactics of preemptive action, rather than calling for premeditated preventive war. So we see that in order to impugn the U.S. by glossing over the important differences between preemptive warfare and preventive war, the Soviets have been impelled in turn to deny any interest of their own not only in preventive war, but also in preemptive strikes.

So far as we know, there are no grounds for believing the Soviets have actually lessened their interest in providing for the contingency of preemptive action in the event that they believed they were imminently to be attacked. At the same time,

while the possibility of a Soviet preventive war (or more simply, deliberate Soviet initiation of war) by surprise attack can certainly not be excluded from serious attention, it is not possible to conclude from the Soviet writings on the subject — as some American writers have attempted to do — that the Soviets evince an interest in preventive war. Soviet military writings, while obviously they can never prove a reliable indicator of Soviet plans to start a war, do provide us some insight into judging the doctrinal background to such Soviet decisions.

Surprise is considered by the Soviets to be no recipe for britzkrieg victory, even with the use of nuclear and thermonuclear weapons. For example, while Rotmistrov wrote in *Military Thought* that "surprise attack with the mass use of new weapons can *in certain cases* provoke the quick collapse of a state whose capability for resistance is low," he carefully specified the necessary causes for this low capability for resistance in terms which clearly exclude either the Soviet Union or the United States. While the United States might, in the Soviet view, be weakened by "basic failures of its social and economic structure," it certainly does not suffer from the other condition he specified, "an unfavourable geographic location."[35] Rotmistrov thus allows the possibility of successful nuclear surprise blitzkrieg, but only against weaker powers. Another Soviet writer (in 1957), concluding that the Soviet bloc would be seriously hurt but could not be defeated by an American surprise thermonuclear attack, wrote: "Strategic surprise today, thanks to the (possible) use of thermonuclear weapons, has become extremely and unprecedently dangerous. Any other evaluation would be blind and naive. But from this fact follows *not* the victory of (capitalist) militarism, but only the very great cost of the victory over militarism."[36] "Counting on surprise," as the Soviets recognize, "is the main argument for a blitzkrieg."[37] But, as we shall see below, the Soviets continue to reject the conception of *reliance* on a blitzkrieg attack.

In rejecting surprise thermonuclear attack as a reliable foundation for a strategy, the Soviets do not deny the importance of gaining surprise. As we have seen, they would strive to seek the initiative in a preemptive strike if the United States were to attempt a surprise attack; it is also clear that in any general nuclear war which the Soviets would unleash they would seek maximum attainment of surprise. But it is also a key aspect of Soviet thought that surprise cannot assure victory, which is determined only in a long war on the basis of superiority in basic morale, economic and military potential.

"Adventurism," or the taking of unnecessary risks, is a cardinal sin in Bolshevism. The Soviets evaluate any attempt of a great power to destroy another great power by a "lightning blow," even with powerful modern nuclear and other weapons in a surprise attack, as adventuristic. Hence, "Adventuristic antiscientific theories of 'atomic blitzkrieg,' 'lightning' and 'air' wars, etc., are alien to the military science of the socialist state."[38] As Lieutenant General Gritchin once put it: "blitzkrieg can lead only to a blitz collapse . . . ."[39]

A powerful military attack may not be an adventuristic "lightning" blow only if, when carefully calculated on the basis of the respective strength (potential and in being) of the enemy, it yields not only a probability of success, but involves no serious risk of disaster. Blitzkrieg in a general nuclear war, despite the much greater power of a surprise strike, necessarily involves unassumable risks. In a nonnuclear or a limited war, Soviet military doctrine does favour a "salient thrust" deep penetration of combined forces (with strong armoured and supporting air components); but only with the requisite reserves and superiority of forces.[40] In a unique reference to the only available illustration of a Soviet strategic operation of this nature, a Soviet colonel has declared of the Manchurian campaign of August-September, 1945: "That was an example of a genuine lightning war, not at all like the myth of 'lightning' war which was created by the German General Staff."[41]

In contrast to the concept of blitzkrieg, Soviet military doctrine has long held that "Victory in modern war is achieved by a decisive defeat of the enemy in the course of armed conflict by means of successive blows of increasing strength . . . ."[42] This particular statement was made by Major General Talensky in his article in *Military Thought* in Septembre, 1953, which opened the debate on laws of military science. Talensky also stated at that time that offensive operations of "successively mounting efforts" were "the basic character of armed conflict."[43] In the debate on military science several participants took issue with the view that consecutive blows of *mounting* strength were a law of war. Colonel Voronin pointed out that while this was true for the Soviets in World War II, it was not for the Germans, whose attacks became progressively weaker in the course of the war.[44] More importantly, Colonel Kapralov noted that while the system of increasing strength of attacks proved itself in the defeat of the Germans, "that does not mean that the forms and methods of conducting recent warfare can be unalterably transferred into warfare

of the future."[45] And the article in April, 1955, which closed the debate mentioned as one point raised by Talensky and still an open question precisely the idea of "consecutive blows increasing in strength."[46] But while it remains a question whether *mounting* strength of blows is always necessary or desirable, there is no uncertainty about the continued rejection of the "one-blow" (including "first blow") theories. "The outcome of contemporary war," Soviet military men insist, "*cannot* be decided by one engagement;" thus "Victory in war is achieved not by one, two, or several engagements, but by the achievement of a series of military campaigns and operations."[47] And, in the words of Lieutenant General Tsvetkov, "The ultimate result of the armed conflict – the complete defeat of the armed forces of the enemy – can be achieved only as the conclusion of frequently repeated blows, each of which is distinguished by objective, scale, and character of forces used, by scope of time and space, and by results."[48]

Lieutenant General Krasil'nikov, of the General Staff, has summed up well the Soviet view of blitzkrieg in the following passage:

> Some military figures in the United States, exaggerating the potentialities of atomic weapons and aviation, continue to assert that the fate of a war can be decided by powerful, concentrated "lightning" air attacks against the rear of a hostile country and against the main groupings of its armed forces. The operations of land and sea forces in this case would be relegated to an essentially auxiliary role – to finish off an enemy already shattered by air attacks, and to occupy a disorganized country by means of airborne or other rapid operations. With contemporary means of air attack such a method of waging war can be successful against an enemy defenseless in the air and against an individual country with relatively small territory or a small group of such countries. But *against a large country well-armed with modern military weapons* and especially against a coalition of such countries, *such a means of waging war cannot yield victory and can lead only to enormous mutual destruction and sacrifice.*[49]

This rejection of the concept of blitzkrieg by surprise attack has been reiterated dozens of times in recent years, and continues to represent the current Soviet view.[50]

Soviet analysts frequently criticize American military thinking for overreliance on strategic surprise, blitzkrieg, and on nuclear weapons as well. In the period prior to about 1957, Soviet military commentators often drew attention to what they regarded as an American lack of recognition of the consequences of Soviet retaliation in any attempted U.S. blitzkrieg by surprise nuclear attack.[51] Even now the Soviets declare that the aim of the imperialists is "surprise attack in the hope of attaining a blitzkrieg victory. It is an adventuristic tactic – surprise attack with contemporary weapons of destruction will be answered by a massive retaliatory blow."[52] However, while this view is expressed both for propagandistic motives and for reasons of real fear of such an attack, recently some Soviet men have concluded that American strategists and military theoreticians now have come to recognize in part the problem of bilateral thermonuclear strikes. And, consequently, they believe that many Westerners "have begun to understand that placing one's stakes on a decisive strategic effect from wide scale use of nuclear weapons does not decrease, but rather increases, the adventurism of the imperialist military doctrine" with its reliance on surprise and britzkrieg.[53] Nonetheless, the Soviets believe (in Major General Boltin's words) that: "The most avid imperialists, blinded by their furious hatred of the socialist world, continue to dream of a new 'blitzkrieg' against the countries of the socialist camp and of a destructive Third World War intended to destroy Communism by military force," despite the fact that "the imperialist doctrine of a blitzkrieg atomic war against the U.S.S.R. is obviously untenable."[54]

The Soviet rejection of blitzkrieg is, of course, concomitant with their view that major wars are long contests ultimately decided by the sum of the military, economic and morale potentials of the adversaries.

The doctrinal rejection of a blitzkrieg is almost certainly also a reflection of calculations not made public. The Soviets, in considering a possible blitz thermonuclear strike on the United States (in particular on SAC bases in the U.S. and abroad, but also against other air bases, naval aircraft carriers, and other army and navy forces) must calculate on the possibility, if not probability, of a sufficiently strong force escaping the initial blow to retaliate against Soviet air bases and cities. Moreover, they would still not be in a position to occupy North America. A super-Pearl Harbor attack is reasonable only if there is expectation of defeating the United States by the initial attack itself. Every tenet of Soviet military doctrine is opposed to the conclusion that such a venture would lead to quick victory. Surprise, even if achieved, is not believed to be decisive in the sense of sufficient, and attainment of

a real blitzkrieg is not believed feasible in a contemporary major war between great powers.

Just as blitzkrieg is not adjudged a feasible strategy for the Soviet Union, it is not considered a winning strategy for the West. Concretely, in considering the threat of an American blitzkrieg, they may estimate that even though powerful SAC forces might precede or evade their planned preemptive action and strike Soviet air bases (and cities), the Soviet Army would be able to operate effectively in driving the United States and allied military forces from the Eurasian continent and denying to the enemy any opportunity to occupy the U.S.S.R. Destruction would be great, but it would be mutual, with bilateral effects. Thus a long war or negotiated peace would still be the outcome of any enemy attempt at blitz action.

In summary of this discussion of the reassessment of the role of strategic surprise and blitzkrieg in post-Stalinist military thinking, we may note six conclusions:

(a) The Soviet reevaluation of surprise in 1954 and 1955 represented a significant modification of Stalinist doctrine. The new view has remained essentially unchanged since 1955. The advent of nuclear and thermonuclear weapons and high-speed long-range delivery means, particularly jet aircraft and missiles, has led the Soviets to recognize the greatly increased potency of a surprise attack. Surprise is now recognized as a critical factor in modern war. The premium attaching to successful surprise is recognized as having greatly risen.

(b) Despite this greatly increased importance of surprise, the change is not absolute. In Soviet doctrine, surprise has *always* been recognized as advantageous, it has *never* been regarded as decisive. Strategic surprise continues to be considered a factor which does not ensure and decide the outcome of major wars. In practical terms, this means that Soviet doctrine considers that surprise is not a reliable basis upon which complete victory can be anticipated, as much as the advantages of surprise have increased. Under certain circumstances it may even be a necessary condition for success; but *it is never a sufficient basis for success* in a war between prepared major powers. Surprise does not provide a basis for achieving a blitzkrieg victory.

(c) The "imperialists" not only are aware of the increased importance of surprise but exhibit a predilection for surprise attack, and it is thus a likely enemy strategy if he should unleash a general war.

(d) The danger of an enemy surprise attack can be substantially neutralized by a high degree of vigilance and high level of constant combat readiness for a Soviet preemptive strike. Preparedness can thus frustrate and foil any enemy attempt at a quick victory by a surprise attack. Launching or preparing to launch an intended initial surprise blow by the enemy is no guarantee of *achievement* of surprise, and the Soviets profess themselves able to prevent the success of any attempted surprise attack by defensive and preemptive action.

(e) In a general nuclear war launched by the Soviet Union, considerable efforts would be exerted to maximize the great advantages of surprise of the attack, especially by Soviet long-range air power and ICBMs. The Soviets will not be led to initiate war simply because they believe they can achieve surprise, for it is not in itself decisive. On the other hand, if for any defensive or expansive reason they do decide to launch a general war, they will certainly seek the gains of surprise to bolster their presumed superiority in the ultimately decisive factors.

(f) We cannot rest assured that the Soviet leaders will not some day launch a massive surprise assault upon us in their effort to gain mastery of the world. Soviet military doctrine does *not,* however, encourage them to rely upon surprise attack itself to yield a quick and easy victory. *If* the United States were ever to let its whole military strength so decline that the Soviets believed they could win at acceptable cost on the basis of their picture of all the requirements of modern war, including both a blunting of our strategic nuclear capabilities and a defeat of all our other military forces, there would be serious danger of a Soviet attack. Clearly our responsible duty is to prevent such a situation from ever coming about, by energetic attention to improving the whole range of our deterrent capabilities. But we do not find in Soviet military doctrine a proclivity to underestimate the difficulties of winning a future war, or a predilection to overestimate the fruits of a surprise attack.

---

[1] The reader's attention is invited to the author's forthcoming book, *The Soviet Image of Future War,* (Public Affairs Press, Washington, 1959) on which this article is based, and also to his recent comprehensive study *Soviet Strategy in the Nuclear Age* (Praeger, New York, 1958).

[2] See Garthoff, *Soviet Military Doctrine* (Free Press, Ill., 1953), p. 274 for several examples, and see also Col. Gen. V. Popov, "Some Questions on Surprise," *Voennaia mysl'*, No. 12, December, 1951, pp. 17-31.
[3] Maj. Gen. N. Talensky, *Voennaia mysl'*, No. 9, September, 1953, pp. 37-38.
[4] Col. I. Nenakhov, *Voennaia mysl'*, No. 10, October, 1953, pp. 7 and 14.
[5] See Maj. Gen. N. Pukhovsky, *Voennyi vestnik*, No. 1, January, 1954, p. 18; Cols. S. Mazhorov and I. Tikhonov, *Krasnaia zvezda*, February 28, 1954; Marshal A. Vasilevsky, *Krasnaia zvezda*, February 23 and May 9, 1954; Col. A. Piatkin, *Voennaia mysl'*, No. 3, March, 1954, p. 23; and Cols. A. Strokov and I. Maryganov, in *O sovetskoi voennoi nauke*, [June 30] 1954, p. 54.
[6] This point is discussed in detail in my article "Soviet Doctrine on the Decisive Factors in Modern War", *Military Review*, July, 1959.
[7] Col. A. Piatkin, *Marksizm-leninizm o voine, armii, i voennoi nauke*, 1955, pp. 69-70, and Pukhovsky, *Marksizm-leninizm o voine, armii, i voennoi nauke*, p. 107.
[8] Col. A. Piatkin, *Marksizm-leninizm o voine, armii, i voennoi nauke*, 1955, pp. 69-70, and Pukhovsky, *Marksizm-leninizm o voine, armii, i voennoi nauke*, p. 100.
[9] Capt. 3rd Rank V. Avramenko, cited in *Voennaia mysl'*, No. 11, November, 1954, p. 44.
[10] See Garthoff, *Soviet Strategy in the Nuclear Age*, pp. 67-69.
[11] Editorial, *Voennaia mysl'*, No. 3, March, 1955, p. 4.
[12] Marshal of the Tank Troops P. Rotmistrov, "On the Role of Surprise in Contemporary War," *Voennaia mysl'*, No. 2, February, 1955, pp. 18-19.
[13] *Ibid.*, p. 20.
[14] *Ibid.*, p. 21.
[15] *Voennaia mysl'*, No. 2, February, 1955, p. 12.
[16] Editorial, *Voennaia mysl'*, No. 3, March, 1955, p. 5.
[17] "The Great Strength of Leninist Ideas on Defense of the Socialist State," editorial, *Vestnik vozdushnogo flota*, No. 4, April, 1955, p. 8.
[18] Lt. Gen. of Aviation P. Braiko, "Soviet Aviation in the Great Fatherland War," *Vestnik vozdushnogo flota*, No. 4, April, 1955, p. 19.
[19] Marshal I. Bagramian, "The Historic Victory of the Soviet People," *Oktiabr'*, No. 5, May, 1955, p. 114.
[20] Col. V. Vasilenko, *Marksizm-leninizm o voine armii, i voennoi nauke*, [February 3] 1955, p. 213.
[21] *Voennaia mysl'*, No. 5, May, 1955, pp. 12-13. See also *Voennaia mysl'*, No. 3, March, 1955, p. 5.
[22] Col. Gen. P. Kurochkin, *Voennaia mysl'*, No. 5, 1955, p. 18.
[23] *Voennaia mysl'*, No. 5, May, 1955, p. 13.
[24] Marshal A. Vasilevsky, *Izvestiia*, May 8, 1955; Marshal I. Konev, *Pravda*, May 9, 1955, and *Krasnaia Zvezda*, May 10, 1955; and Marshal K. Moskalenko, *Slaviane*, No. 5, May, 1955, p. 11.
[25] Lt. Gen. S. Shatilov, *Literaturnaia gazeta*, May 28, 1955.
[26] Maj. Gen. N. Pukhovsky, *Marksizm-leninizm o voine, armii, i voennoi nauke*, p. 100. This statement was added in the 1955 book; it had not appeared in the article as originally published; cf. *voennyi vestnik*, No. 1, January, 1954, p. 18.
[27] Marshal of the Tank Troops P. Rotmistrov, *Voennaia mysl'*, No. 2, February, 1955, pp. 25-26, and p. 21.
[28] Rotmistrov, *Krasnaia zvezda*, March 24, 1955; and Rotmistrov, "Surprise in the History of Wars," *Voennyi vestnik*, No. 11, November, 1955, p. 94.
[29] Marshal of Aviation K. Vershinin, *Pravda*, September 8, 1957.
[30] Maj. Gen. N. Talensky, *Mezhdunarodnaia zhizn'*, No. 8, August, 1958, pp. 68 and 69.
[31] Marshal R. Malinovsky, *Pravda*, May 9, 1958. See also Maj. Gen. N. Talensky, "Problems of Military Strategy and Foreign Policy," *Mezhdunarodnaia zhizn'*, No. 3, March, 1958, p. 34.
[32] Lt. Gen. S. Krasil'nikov, *Radio Moscow*, March 9, 1958.
[33] See N. Bulganin, "Letter to President Eisenhower" TASS, January 8, 1958; M. Baturin, *Mezhdunarodnaia zhizn'*, No. 1, January, 1958 [December 20] 1957, p. 99; *Radio Moscow*, January 23, 1958; Lt. Gen. S. Krasil'nikov, *Radio Moscow*, March 9, 1958; Col. Gen. F. Golikov, *New Times*, No. 17, April, 1958, cited in TASS broadcast on *Radio Moscow*, April 23, 1958; General of Army V. Kurasov, *Krasnaia zvezda*, April 27, 1958; and *Radio Moscow*, July 10, 1958.
[34] M. Baturin, *Mezhdunarodnaia zhizn'*, No. 1, January, 1958, p. 99.
[35] Marshal of Tank Troops P. Rotmistrov, *Voennaia mysl'*, No. 2, February, 1955, p. 19.
[36] V. Skopin, *Militarizm*, Voenizdat, Moscow, second ed., [October 5] 1957, p. 502; first ed. [August 3] 1956, p. 431. Italics added.
[37] See, for example, Col. D. Z. Muriev, in *Bloknot agitatora*, No. 34, December, 1956, p. 28.
[38] Col. I. Maryganov, *Peredovoi kharakter sovetskoi voennoi nauki*, [October 30] 1953, p. 37. See also on adventurism of surprise attack blitzkrieg "The Problem of Surprise Attack," *Novoe vremiia*, No. 28, July, 1958, p. 1; and Col. Ye. Khomenko, *O voinakh spravedlivykh i nespravedlivykh*, Voenizdat, Moscow, 1954, p. 32.
[39] Lt. Gen. N. Gritchin, "On That Which the American Atomaniacs Should Not Forget," *Pravda*, January 7, 1955.
[40] See Garthoff, *Soviet Military Doctrine*, pp. 103-106.
[41] Col. I. Maryganov, *Peredovoi kharakter sovetskoi voennoi nauki*, 1953, p. 110.
[42] Maj. Gen. N. Talensky, *Voennaia mysl'*, No. 9, September 1953, p. 31. See also Garthoff, *Soviet Military Doctrine*, pp. 141 and 153; Col. I. Maryganov, *Peredovoi kharakter sovetskoi voennoi nauki*, [October 30] 1953, p. 32; and Col. V. Petrov, in *O sovetskoi voennoi nauke*, [June 30] 1954, p. 115.
[43] *Ibid.*, p. 40.
[44] Col. V. Voronin, cited in *Voennaia mysl'*, No. 11, November, 1954, p. 40.
[45] Col. A. Kapralov, cited in *Voennaia mysl'*, No. 11, November, 1954, p. 45.
[46] Editorial, *Voennaia mysl'*, No. 4, April, 1955, p. 21. More recently, Maj. Gen. Talensky has reiterated the continuing need for a series of operations of mounting force; see his articles in *Mezhdunarodnaia zhizn'*, No. 1, January, 1957, p. 43, and *ibid.*, No. 2, February, 1958, pp. 21-22.
[47] Col. F. Dankovtsev, *Voennaia mysl'*, No. 5, May, 1955, p. 39; and Col. A. Strokov, *Istoriia voennogo iskusstva*, Vol. 1, [October 17] 1955, p. xxix.
[48] Lt. Gen. A. Tsvetkov, *Voennaia mysl'*, No. 3, March, 1955, p. 52.
[49] Lt. Gen. S. Krasil'nikov, in *Marksizm-leninizm o voine i armii*, [November 28] 1956, p. 155.
[50] For some recent examples, see Maj. Gen. D. I. Kornienko, *O roli moral'nogo faktora v sovremennoi voine* (On the Role of Morale in Contemporary War), Moscow, [September 2] 1958, *passim*; Capt. 1st Rank V. Kulakov, "Ideology of Aggression and Military Adventures," *Krasnaia zvezda*, July 24, 1958; Col. I. Baz', *Voennyi vestnik*, No. 6, June, 1958, pp. 25 and 26; editorial, *Novoe vremiia*, No. 28, July, 1958, p. 1; Col. A. Lapenin, *Sovetskaia aviatsiia*, June 3, 1958; Maj. Gen. Ye. Boltin, *Trud*, May 9, 1958; Capt. 1st Rank V. Kulakov, *Radio Volga*, April 11, 1958, and *Sovetskii flot*, March 8, 1958; Col. I. V. Kravtsov, *Vestnik vozdushnogo flota*, No. 12, December, 1957, p. 86; V. Skopin, *Militarizm*, second ed., [October 5] 1957, pp. 501-503; Maj. Gen. M. Mil'shtein and Col. A. Slobodenko, *Voennye ideologi kapitalisticheskikh stran o kharaktere i sposobakh vedeniia sovremennoi voiny* (Military Ideologues of the Capitalist Countries on the Character and Means of Conducting Contemporary War), [April 22] 1957, pp. 36-40; and Maj. Gen. N. Talensky *Mezhdunarodnaia zhizn'*, No. 1, January, 1957, p. 43.
[51] For example, see Marshal K. Moskalenko, *Slaviane*, No. 5, May, 1955, p. 11; and see Lt. Gen. N. Gritchin, *Pravda*, January 7, 1955.
[52] "The Problem of Surprise Attack," *Novoe vremiia*, No. 28, July, 1958, p. 1; and Capt. 1st Rank V. Kulakov "Ideology of Aggression and Military Adventures," *Krasnaia zvezda*, July 24, 1958.
[53] Capt. 1st Rank V. Kulakov, "The Reactionary Essence and Aggressive Character of the Military Ideology of Imperialism," *Sovetskii flot*, March 8, 1958. For further discussion of Soviet views on American strategy, see Garthoff, *Soviet Strategy in the Nuclear Age*, pp. 119 ff.
[54] Maj. Gen. Ye. Boltin, *Trud*, May 9, 1958.

Limited War Strategy in the Nuclear Era

A HISTORICAL INTERPRETATION

"AQUILA"

THERE have been any number of books written recently on the problems of limited war. Some writers contend that nuclear sufficiency will produce a stalemate in which so-called conventional war will be more or less unaffected, and further that limited war could be regulated by a codified set of limitations mutually agreed between East and West. Some feel that the West would do well to embark on limited nuclear war in which the technological competence of western methods and brains would outshine the "slow-thinking, brave but otherwise inflexible soldiery" of the Communist bloc. Some foresee the use of nuclear weapons in limited war as the inevitable herald of Armageddon. There are some who seek to outlaw nuclear weapons altogether and some who believe, apparently sincerely, that to accept defeat and occupation is better than to face the realities of the nuclear age or even the challenge of the political and economic battle which seems to others to be the only practical avenue towards the eventual establishment of world security.

We may do well to study the past in order to interpret the future, for there certainly seems to be a good deal of sound background to be learnt from the classical theorists. Let us therefore consider some of the experiences and propositions of the past and attempt to interpolate their main precepts to the pattern of the present day. Theory of course has its limitations and, as one great writer has said: "Theory should educate the mind of the man who is to lead in war, or rather guide him to self-education, but it should not accompany him on the battlefield." Indeed, theory cannot replace the trained common sense and instinctive judgement of the experienced commander – the "coup d'oeil". But theory can help us to understand the relations of ideas and to clarify our conceptions. It gives meaning and currency to our views, and evades the pit of mere dogmatic assertion.

HISTORICAL PERSPECTIVE

Early Limitations on War

Up to the end of the 18th Century wars had been limited for a very large number of reasons. Without going further back than the history of European civilization, there were for instance such factors as the feudal system, which virtually confined the length of a campaign to 40 days or so – and then everybody returned home. This obviously put considerable limitations upon the designs of mediaeval monarchs. There were also the weapons themselves, for these were extremely innocuous. Moreover, in the days of the City States of the Mediterranean it was a very rare occurrence for anybody to be killed in battle at all; in fact it was regarded as rather offside if they were. Hatred or enmity were hardly powerful motives in that form of warfare. The soldiers were mercenaries, the so-called condottieri; and very often of the same nationality on both sides, fighting each other on behalf of the rich merchant cities. Then of course there were the problems of victualling men and animals, and consequently wars tended to be conducted in the lowland areas, such as the Netherlands, where there were plenty of crops and fodder. And there were many other forms of limitation, including the paucity of overland communications; for in those days mountains, deserts and rivers presented serious obstacles to movement. Indeed the law of diminishing returns was generally speaking of far greater consequence than it is today.

The Napoleonic System

Thought on war was greatly stimulated after the Napoleonic period, partly because war had become extremely violent and few European states had evaded its most drastic consequences, and partly because Napoleon had initiated an entirely new approach towards the conduct of war. The Napoleonic wars, you will remember, were conducted against a background of revolutionary fervour which Napoleon had used as a catalyst to galvanize his military machine. The so-called Napoleonic system involved the combining of certain known elements which he duly exploited to shattering effect.

First of all the idea of standing armies had been introduced in the 17th Century, but Napoleon fortuitously conceived the idea of a conscripted nation in arms which obviously gave him a call on a much greater source of manpower. A second element, which has stood the test of time, was his tenet that although a nation's power might be composed of a

number of features such as its relative geographical vulnerability, its manpower resources, its weapon technology, its financial and economic strength, and its moral resilience – in particular the will of the people and Government – the ultimate expression or centre of gravity of national power lay in its armed force. And within the Europe of those days this centre of gravity was represented by the army. Napoleon therefore conceived that the aim in war should be to overthrow the enemy's army rather than to occupy his territory, or to seize his capital – as he had found to his chagrin when he occupied Moscow in 1812 and conspicuously failed to defeat the Russians. The third and fourth elements were closely interlinked, being on the one hand his conviction that military pressure should be maintained continuously against the enemy and on the other that this pressure must take the form of offensive action.

Consequently, we saw for the first time in the history of civilization war in this absolute form. It pointed the way to the total wars that were to consume Europe and the world a century later. But even in those days of limited technological development, every European state was so shocked by the ravages of the Napoleonic wars that an attempt was made, the first attempt, to produce a prototype of the League of Nations at the Congress of Vienna. Indeed, under the sanction of the Concert of Europe this arrangement proved reasonably successful for some fifty years or more.

Carl von Clausewitz

It was in these circumstances that a number of war theories and theorists arose in Europe. For instance, Jomini was in great vogue. He tried to reduce war to a science, to a series of laws. However Clausewitz, who produced his work "Vom Kreige" rather later, showed that this was an impossible task. The elements of chance and the moral differences of national and governmental will as well as a wide range of other factors affecting each particular situation dismissed any question of war being reduced to an exact science.

Clausewitz was a practical and successful soldier – far more than a mere theoretician. He had served with the Prussian Army, and when Napoleon overran Europe he served with the Russians in 1812 and saw a good deal of warfare. It was not until the end of his life that he evolved certain essential ideas which had hitherto eluded him. In fact he said that most of his previous work must be regarded as notes for the book he was about to write. Unfortunately he died prematurely of cholera and never expounded his theories in full, but he did leave us an outline in his last work, Book VIII.

War and Policy

The first of the great ideas he produced is familiar to us all – that war is a continuation of policy. War he says is an act of violence to compel the enemy to do our will. But he regarded war as a unity: ". . . the conception of war as only part of political intercourse and therefore by no means an independent thing of itself." Now this is particularly important today because I do not believe that war can be considered in its correct proportions without also considering its political background. Indeed, the question is sometimes asked as to why the Fighting Services bother about politics and economics in their staff training and studies. Well, the facts are that in the last two wars it is quite clear that the necessity for victory has dominated political strategy and this has led, amongst other things, to wars of unprecedented violence. In regarding war as a continuation of policy it means that war is a means to an end, and not an end in itself. It is an instrument of policy and victory is by no means an end in itself. War at its highest point, as Clausewitz said, is in fact policy – "a policy that fights battles no doubt rather than writing notes". And it is interesting today that the Communists are deep students of Clausewitz's theories. For instance, Mao tse Tung, as one might expect, puts the whole conception rather more drastically in these terms: "Politics are bloodless war, and war is the politics of bloodshed."

Unlimited War

The second theory Clausewitz evolved was that there are two kinds of war. There is unlimited war and limited war. We have seen in the last fifty years two examples of unlimited wars. Wars which are unlimited are those wars which seek to compel the enemy entirely to our will, to remove all restraint upon our will when we have defeated him. That involves his absolute defeat. This form of war is reflected in the absolute theory of Napoleon, whereas the limited war is a war for a limited political objective and once that objective is attained, the combatants may be expected to come to terms and negotiate short of resorting to all-out war. Clausewitz realized that in practice there were many factors which prevented wars from becoming absolute. It is interesting, for instance, that even in the last world war the Germans were not mobilized to the ultimate degree, for comparatively few women had been drawn into their factories. Moreover, there are a number of moral factors, such as the extent to which the population is prepared to be

deprived of rations and so forth, which will limit even unlimited war. But broadly speaking the conception stands, and although Napoleon in his day considered that in unlimited war the centre of gravity was the armed force or the army of the enemy, in our own time it is certainly possible to agree substantially with Mr. Dean Acheson and many others that the centre of gravity of national power has swung much more to the industrial capacity of a state, and to its moral and psychological cohesion.

Limited War in the Continental Context

Turning to the limited concept, Clausewitz also realized that even limited war tends to become unlimited. This is fairly obvious from the fact that although two nations may have limited political objectives, the inevitably unfavourable consequences of defeat may provoke the contesting governments to raise the stakes they are prepared to put upon the issue of war progressively until they may very well find they are committed willy nilly to an unlimited challenge. Therefore the conduct of limited war must be extremely carefully regulated, and this was particularly the case against the continental background where contiguous frontiers failed to provide a palpable geographical or topographical barrier against the conversion of a war for a limited political objective into an unlimited war at the discretion of either side at any time. In stressing the restraint required to keep a war limited, Clausewitz comments in these terms: " . . . it is here that the action of the mind leaves the province of Science, strictly speaking, of logic and mathematics and becomes, in the widest sense of the term, an Art, that is skill in discriminating by the tact of judgement among an infinite multitude of objects and relations that which is the most important and decisive. In order to ascertain the real scale of the means which we must put forth for war, we must think over the political objects both on our own side and on the enemy's side. We must consider the power and the position of the enemy's state as well as our own, the character of his government and of his people and the capacities of both, and all that again on our own side." And he concludes that, "In this sense Bonaparte was quite right when he said it would be a problem in algebra before which a Newton, (and I suppose today we might say an Einstein) would stand aghast."

The Seven Years War

This is the nature of the problem that we have before us today when assessing the many intricate factors upon which the limitation of war depends. The main factors are very much the same as Clausewitz saw them in his time: the relative political demands or objectives of each state; the geographical situation of the states and their respective allies; and such moral factors as the strength and will of the government and the people. As an example, he refers in particular to Frederick the Great's conduct of the Seven Years War. You will remember that on the death of Charles VI, Frederick had seized Silesia from Austria on the pretext of some trumped up Hollenstein claim; and he proposed to keep it. His limited political objective was therefore to retain Silesia and to defend the newly consolidated power of Prussia. He had mobilized the whole moral and material resources of Prussia, and had produced a military system which was at that time second to none in Europe. He was opposed by the combination of the whole of Europe, except for England which gave him some support in Hanover, and he had to face armies several times the numerical strength of his own — French, Austrian, Swedish and Russian.

The problem he was faced with was every bit as complicated as the problems facing war leaders in our own time. In brief and inevitably over-simplified terms, he judged that if he avoided inciting the Austrian populace by a direct attack on Austrian territory, Maria Theresa would not be able to mobilize the total moral and material resources of her country to wage a successful unlimited war against him. Perhaps we may say that provided he observed certain restraints he could exploit the popular indifference to this largely dynastic quarrel in order to limit his enemy's power, while ensuring that he was in no way subject to similar limitations himself. He took many calculated risks in this war, the first being to attack and occupy Saxony before the hostile coalition was ready to strike. This move gave him a stronger position in the centre of Europe where he could parry the Austrians and exploit his internal lines of communication to switch his army against any hostile threat from North, East, South or West. Furthermore he also judged that neither the Swedes nor the Russians would be particularly anxious to press the issue to an unlimited and costly struggle all for the sake of Maria's dynastic claims.

The Seven Years War illustrates one of Clausewitz's basic concepts which he expresses thus: " . . . the smaller the sacrifice we demand from our opponent the smaller presumably will be the means of resistance he will employ, and the smaller his means the smaller will ours be required to be." And here he also points out that it is bad policy to commit oneself to exertions in excess of those re-

quired to achieve the limited objective, which is of course the rational justification for our own accepted principle of using no more force than is necessary to attain the aim. However, the force one might have to use to achieve a limited political objective might involve committing, as in the example of Frederick the Great, the whole of a nation's resources. But in other circumstances the mere moving of an army of observation, as he called it (we might even call it a deterrent), to the borders may be sufficient to prevent some hostile threat developing.

Limited War in the Maritime Context

An interesting extension of this line of thought emerges from Julian Corbett's book written in the early 1900s called, "Some Principles of Maritime Strategy". Here he pointed out that although Clausewitz had evolved his theory purely within the continental context it was equally valid in the maritime context. He asserts that in the maritime context seapower provided a positive limitation, isolating the war area and often even preventing it altogether. As examples, he refers to the struggle between England and France in Canada, and in particular to the Russo-Japanese war of 1904.

The Russo-Japanese War

The Russians were about their usual expansion and sought an ice-free port south of Vladivostok. They managed to lease Port Arthur from the Chinese, and linked it by rail across Manchuria to the Trans-Siberian railway. The Japanese considered that these developments constituted a serious strategic threat to the security of their homeland. They therefore landed an expedition on the Lao Tung Peninsula, captured Port Arthur, and destroyed the Russian fleets based there and at Vladivostok. Then the Russians sailed their Baltic fleet around the world to Japan, where it was decisively defeated in the Battle of Tsushima. It is of course clear that Japan could not have hoped to involve herself in an unlimited contest with the whole power of Russia. But the centre of Russian power lay in her military strength in the West, far removed from the geographical area of her Pacific coast. After the decisive Battle of Tsushima therefore, the Russians, rather than muster the very large forces required to reassert their power in the East, were prepared to come to terms.

It is interesting to compare these two examples of Prussia in the 1750s and Japan in the 1900s. Both were wars of limited liability for limited political objectives. Both were strategically defensive wars, and both involved tactically offensive action. And both were won in their different circumstances by "... skill in discriminating by the tact of judgement among an infinite multitude of objects and relations that which is the most important and decisive." In the case of Frederick the Great the factors exploited to keep the war limited were mainly moral, and in the case of Japan mainly geographical.

Now when we consider England's position in the maritime era, it is the very exploitation of this geographical shield of the sea around her that lay at the heart of her power. There was no way in which another nation could pose her with an unlimited challenge, and therefore all wars in which she was involved bore the character of limited war. Indeed, as the great Bacon said in one of his most discerning aphorisms: "This much is certain, he that commands the sea is at great liberty and may take as much or as little of the war as he will, whereas those that be strongest by land are many times nevertheless in great straights."

Limiting Factors in the Nuclear Era

Naturally, this is familiar to anybody who has thought about Britain's maritime past, but in the next phase of technological development, we find machines like the U-boat and the aircraft beginning to undermine the central pivot of Britain's maritime position. These changes were revealed for all to see in the World Wars, particularly the Second, and it is interesting to observe the consequent transformation of the old concepts of maritime and continental strategy. Their political, economic and military complexions become increasingly similar until from a strategic point of view they may be considered to have merged into a concept of global strategy. One of the most obvious strategic consequences of this reorientation is that in whatever geographical area a limited war may break out we may be brought face to face with a potentially unlimited challenge from the once geographically remote and land locked power of Russia. For better or for worse, this will always be a danger in the era of global missiles.

If therefore geography is no longer an effective shield, what are the limiting factors today? They might perhaps be expressed primarily as the need to avoid unlimited war itself. First of all, no national political objective can be attained by an unlimited thermo-nuclear conflict – at any rate between two full scale nuclear powers. And secondly, there is the universal moral fear of the consequences of an unlimited thermo-nuclear war.

It is interesting here to recall the history of the Korean war. From the first our difficulties centred upon the problem of how far we could extend our political objective without running the risk of bring-

ing the Chinese and the Russians into the war against the United Nations' forces. Then, after the battle of Inchon, the political objective of the United Nations was changed; and instead of being prepared for a settlement along the 38th Parallel, General MacArthur extended the war rightly or wrongly into North Korea with the wider but still limited aim of uniting North and South Korea. At that juncture the Chinese came in and crossed the Yalu river. Perhaps we made a misjudgement. General MacArthur wanted to extend the war even further and to blockade the Chinese ports and bomb the Manchurian airfields. Would that have brought the Russians in as well? If we had used nuclear weapons, would that have raised the stakes to a point where the Russians might have entered the war? In retrospect probably not, especially in view of our nuclear monopoly at that time, but nevertheless the fact remains that this was the substance of the arguments underlying the whole problem of keeping the war in Korea limited. And their main focus falls upon the moral issues, which, as Clausewitz reiterates, must always be considered to transcend all other factors in war. Such are the precepts that lie at the heart of our most perplexing difficulties today.

Let us therefore examine a little more closely the factors that govern our action in limited war in conditions of what is sometimes called "nuclear sufficiency", which simply means that for all practical purposes both East and West possess the power to destroy each other as viable national entities.

LIMITED WAR IN THE GLOBAL CONTEXT

In face of the militant expansionism of Soviet Communism, the West must contrive to contain the relentless political, economic and military pressures throughout the world, and support its own policies and interests without invoking unlimited or global war. The prime and inescapable military condition for attaining these aims is to deter the enemy from attacking, threatening or blackmailing us with his thermo-nuclear offensive power. Our global nuclear potential is therefore the fountainhead from which the efficacy of our strategy in limited war ultimately flows.

Political and Moral Issues

In effect the global deadlock in unlimited war between the major nuclear powers imposes certain tacit restrictions upon the nature and extent of the limited action they can adopt against each other. It is clear that an attack by one or other side against a vital sovereign interest would lead to global war except on the wholly untenable hypothesis that we or the Soviets would be prepared to succumb to what would be tantamount to a major national defeat. Therefore the circumstances of each limited conflict must be most carefully calculated to ensure that in the eyes of the Soviets the issue is less than vital to them. In general terms this virtually commits the global powers to a *status quo* in respect of vital sovereign interests. And here the West may find some advantage in that Russia is economically self-contained and cannot claim that her interest in the rimlands of Eurasia, e.g. Iraq or India, is vital, whereas the West has many vital or near vital political and economic interests in these areas, which Russia cannot afford to run the risk of neglecting. Hence the Soviet Trojan horse tactics of war by proxy.

Meanwhile the growing sanction of the United Nations Organization must be taken into account when considering issues and regions that are less than vital to the nuclear powers — sometimes referred to as the "grey areas". Whichever side is deemed to be the aggressor will lose the support of U.N.O. and will run the risk of being isolated from the political, economic and military support of its allies, and even of the condemnation of the whole world. In this case, irrespective of any theoretical regard for the rule of law, the fruits of victory would be denied to it and its political, economic and military profit and loss account would soon reveal a grave deficit. And here again the West enjoys an advantage in that it seeks no expansion at the expense of the Soviets, whereas the Soviets avowedly seek to expand their influence at the expense of the West, and therefore incur the *prima facie* risk of being branded as the aggressors. On the other hand the Soviets are less susceptible to economic sanctions and are unharassed by public opinion at home. Nevertheless, they are highly sensitive to world opinion upon which they realize the success of their ultimate political aim depends. To this end they will do all they can to manoeuvre the most powerful supporters of U.N.O. into a position of isolation in the hope of being able to exploit it on their own terms.

Thus in the era of nuclear strategy the importance of assessing the political and moral implications of military action is all-pervasive. Virtually the only practicable context for international warlike action in the present politico-strategic situation is in pursuit of aims that are morally justifiable, preferably by the common consent of the United Nations Organization and world opinion, but at the very least by the common consent of all important allies. In practice, this is tantamount to narrowing one's freedom of action to defensive aims. However, such

a context is not so easily recognizable in all circumstances because defensive aims often involve direct and indirect offensive military action. Moreover, this process of proving justification may take time and give rise to embarrassment in the interim, especially if extreme measures become necessary before the aggressive designs of the enemy are revealed to world opinion in all their nakedness.

Furthermore, these moral and political considerations apply constantly at every phase in the conduct of operations. Despite the initial support of world opinion in opposing aggression, we could easily lose that support if we resorted unnecessarily to excessive military force — using a sledge-hammer to crack a nut! The danger of outraging the world conscience and turning the political and moral tables against us, clearly demands that we should seek to "use no more force than is necessary to achieve our aims". Apart from this self-evident reason for adhering to this doctrine, there is also the long standing precept we have already discussed, that war is a continuation of policy by other means; and therefore no state should risk the purposeless extension of a limited conflict nor unnecessarily aggravate the hazards to its own fate. Nevertheless, what may or may not be deemed "necessary" in the perspective of nuclear strategy today will emerge in due course.

Local Deterrent

Once assured that we can rely upon an adequate measure of world moral and political support we may assemble our limited war force. This may be visualized as comprising two main elements which together form the basis of any limited war force. First, there is the local or little deterrent element with which we may seek to pose a major or discreet threat (inevitably nuclear) of decisive retaliation against Soviet aggression by proxy; and second, there are various combinations of supporting land, sea and air forces. The latter may be called upon to act as a stabilising force, a police force to patrol a frontier or safeguard internal security (e.g. in the Lebanon or Jordan); or they may have to take an active part in a campaign where the situation does not make the use of major offensive power imperative or justifiable (e.g. Korea or Suez); or they may be used to challenge the enemy and give him clear warning that his continued aggression will invoke the intervention of decisive but hitherto restrained power (e.g. Quemoy).

In a simple case of say a situation like Quemoy, military aggression was clearly made by Communist China — whatever the arguments concerning the respective political claims of Communist and Nationalist Chinese to the off-shore islands. Considering the military problems alone for the moment, these hinged around the defence of an island against a threatened invasion. Provided the enemy had no nuclear arsenal, it would have been possible for the U.S.A. simply to give him notice that an invasion would invoke immediate retaliation with tactical nuclear weapons. But, world opinion being as yet opposed to the use of nuclear weapons, however logical or illogical the reasons for this opposition, it was obviously desirable if possible to rely upon conventional forces to achieve the limited aim of halting aggression. Thus what was required at Quemoy was a combination of suitable arms to challenge the enemy and ensure that a Communist invasion could not succeed owing to Nationalist default, whilst keeping the decisive threat in being in the background — i.e. in the Seventh Fleet and in Formosa, where the installation of nuclear projectiles was a symbol of unity amongst friends and a tacit warning to foes. In this case the escort forces at sea were augmented by United States vessels, and the latest air fighting weapons, Sidewinder rockets, were provided by the United States and put to good use by Nationalist Chinese airmen. In the event, these air formations successfully challenged the enemy and cleared him from the skies, thereby impressing upon him our determination to resist, and leaving him in no doubt that if he persisted in his aggression he would be met if necessary by nuclear retaliation. The fact that there were excessive numbers of Nationalist Chinese troops on the island was of course incidental.

If, in similar circumstances, the enemy forced our hand and left us with no choice but to use our nuclear weapons, then we should certainly use them rather than accept defeat; but we should endeavour at the same time to expose the enemy's aggressive intentions thereby establishing unequivocal justification for exercising our nuclear advantage. Furthermore, if initial nuclear attacks in the purely tactical sphere failed to halt the enemy we might then have to raise the nuclear stakes by threatening to attack enemy installations supporting his troops, or even his major cities. In the case of China, the Soviets could still do little to help her unless they were prepared in the long run to face the ultimate and inevitable nuclear dilemma of withdrawal or resort to the suicide of global war for issues less than vital to themselves. This process of progressively raising the stakes, and *presenting the enemy with the choice at each stage of invoking the use of the greater threat* against him, demands cool nerves, especially if we are ultimately forced to present the enemy

with the threat of global war. Where our interests are vital, for instance western sovereign territories or the Atlantic supply lines, this is the unequivocal stake we put upon them. In Europe, for example, we have set the stakes at their highest, making it incontrovertably clear that a Soviet attack will invoke all-out Anglo-American nuclear retaliation.

One of the basic conditions for success in limited or peripheral war in this era is the capacity "to concentrate superior force at the critical time and place", or as General Forest of the Confederacy once put it, "to get there the firstest with the mostest". The principles of war do not alter. Here we must exploit the modern potentialities of transportation to allow for optimum flexibility in the composition of the force required at the threatened point, for adequate capacity to maintain the force, and for the maximum speed of deployment and rate of build-up. Although both the main nuclear and supporting components must be considered as integral parts of any limited war force there are widely differing factors affecting on the one hand the disposition of the nuclear forces and on the other the tactical combinations of the supporting elements in varying circumstances.

For instance, it might be contended that our global nuclear air forces, with their world wide chain of bases, already cover the scene of operations in any part of the globe well nigh permanently. However, we should avoid any chance of confusion between the local and tactical action by part of our main nuclear bomber force and its global strategic function. It will normally be desirable therefore to dissociate its role as a local discreet threat (or little deterrent) from that of a global deterrent by deploying a detachment to a base within the geographical area of the local operations. This action may also be expected to impress the local enemy all the more forcibly with the inevitable consequences of his continued aggression. Such arguments suggest that, depending on the strategic factors affecting the local conflict, the most suitable nuclear threat may prove to be a tactical nuclear force rather than major units of the global war class.

Another feature of this problem, admittedly peculiar to Britain, is that the threat of the main British nuclear bomber force is directed against the one hostile power possessing a global nuclear potential of its own — Russia. To lower our guard and divert our own potential to a purely local tactical role contains obvious dangers. Provided the U.S.A. was wholeheartedly in support of our action in a particular peripheral conflict, it might appear theoretically feasible for Britain to rely temporarily upon the U.S. Strategic Air Command for her global security whilst she devoted a major proportion of her main bomber force to the local conflict. This is a matter of high policy, but the U.S.A. and Britain may not always be in absolute agreement upon their approach to all concurrent politico-strategic problems at any single point in time. Indeed differing approaches may be to our mutual advantage. Therefore, the circumstances may be comparatively rare when we could afford to divert more than a small proportion of our main nuclear potential to local and tactical operations without risking Soviet blackmail or an attempt to disrupt the Anglo-American partnership.

A final point concerning the discreet nuclear threat is that it must of course be concentrated at the right place and time. For the time being the speed and flexibility of air mobility seem to suggest a preference for aircraft (or airborne missile platforms) rather than (land based) missiles in this limited war role. Moreover, the large size of aircraft possessing the necessary range and scale of modern technical equipment for optimum performance and accuracy suggests that land based aircraft will normally prove the most efficient deterrent. Nevertheless, the technical parameters change rapidly and must be subjected frequently to dispassionate reappraisal.

Supporting Combinations

There is no inflexible reason why the supporting land, sea and air elements of a limited war force should always be confined to "gunpowder" or so-called "conventional" weapons except for those implied in our discussion up to this point. In due course it may well be that the most judicious way of breaking the nuclear ice in limited war will be by the use of the lowest yield nuclear weapons. This break has yet to come and it will probably become inevitable under the pressure of economic and military logic, but it will in no way alter the general principles we are now discussing.

Broadly speaking there are two major problems concerning these supporting elements in our limited war force — the scale and nature of their tactical combination in relation to the particular circumstances of the local conflict, and their deployment to the area. When considering the scale of these forces, we have already implied that there are the two extremes: at one end of the scale we could of course assemble vast conventional forces of similar proportions to those deployed in Korea, and at the other end of the scale we may provide a small force to challenge or test the enemy intentions on a clear-cut

issue by establishing as it were a defensive "glacis"* over which he will clearly see the superior concentration of nuclear power he will invoke if he blindly pursues his aggressive aims. In perhaps simpler terms, the latter force may be conceived as a guard, ready to challenge intruders and to raise the alarm to summon adequate assistance.

Consider first the attempt to match like with like in a major conventional conflict. In Korea the United Nations forces were eventually confronted with over a million Chinese troops, five hundred tanks and a thousand jet aircraft. Had the Communists not miscalculated, and had this force been poised in North Korea in June 1950 instead of the eight or ten divisions of the North Korean People's Army (N.K.P.A.) backed by a handful of tanks and aircraft, what on earth chance would the few understrength Republic of Korea (R.O.K.) divisions have stood of defending the vital port of Pusan — even if the first of the United States divisions to arrive (the 24th U.S. Division) had still been able to reach the Pusan perimeter within a fortnight (30th June - 5th July) of the Communist aggression. We should then have been forced to accept defeat or to use nuclear weapons, or to muster even larger conventional forces than we did. To contemplate mustering the vast conventional forces that might be required in a future situation of this kind is to fly in the face of all the principles of war and could only lead us into the limbo of confusion, bankruptcy and eventual subordination to Communist designs. It would be to abandon our main strategic advantage which opens the way to the pursuit of a methodical nuclear strategy based on the facts of power today.

Now let us consider what we might call a "nuclear" strategy in contrast to a "conventional" strategy in limited war. From a political and economic point of view the optimum size and conventional/nuclear balance of forces required largely depends upon the extent to which the West is prepared or able to provide conventional forces to challenge a particular conventional aggression in order to avoid resorting to nuclear action. Here, an effective compromise must clearly ensure on the one hand the continued health of the western economy and on the other that world opinion is not unnecessarily outraged by the premature use of excessive force. From a purely military point of view the optimum size and balance of forces will depend upon such factors as the practicability of deploying the necessary forces to the theatre of operations in the light of western transportation facilities, and upon their efficiency in contributing towards the attainment of the limited strategic objective. When we consider that a weapon like the nuclear bazooka manned by two men may be ten or fifty times more effective in action, ten or fifty times cheaper to manufacture, and ten or fifty times easier to transport quickly by air than its conventional equivalent amounting to several regiments of artillery, it is difficult to suppose that the artificial and emotional distinctions between conventional and nuclear weapons and strategy will long survive in practice. In general terms therefore it is clear that a nuclear strategy promises to enhance our political, economic and military freedom of action.

In the peripheral areas of Communist China, it is highly doubtful whether a determined ground attack could be matched in time or quantity by conventional western armaments, short of running into the grave danger of bleeding the West white in terms of men and money. Indeed, even nuclear equipped supporting forces might be impracticable. Therefore the policy of establishing what I have called a defensive "glacis" may be the only feasible approach, in which the ground component would consist mainly of Asian allied forces. Whereas, it seems that western ground forces are therefore unlikely to play more than the comparatively limited role in the Far East of staunching the fibre of indigenous forces, seaborne and land-based air forces may certainly be exploited to challenge the Communist air forces, thereby demonstrating our determination to resist as far as possible without resorting to major nuclear weapons, but at the same time bringing the enemy face to face with the certain risk of invoking decisive nuclear retaliation if he proves obdurate.

The precise combination of force to test the enemy's intentions will vary depending upon the availability of sea or land bases for aircraft and missiles, the availability of local allies or alternatively the accessibility of the area by sea or air for the landing and supporting of the air and ground forces and so forth. Combinations of land and sea bases can be found conveniently for the defence of a Quemoy or even a Hong Kong, but the introduction of forces into say Turkey, Persia and the Persian Gulf states to secure the Persian Gulf area or seal off a chaotic situation in Iraq would probably call for a combination mainly of air transported and airborne forces supported by tactical and long range land based aircraft. Similarly, if the Russians withdrew from Berlin, a western ground operation to open the land communications in defence of the city

* Glacis — The smooth prepared slope in front of the moat of a castle, over which the attacking force of "forlorn hopes" are forced to expose themselves to the full force of the defending fire from the fortress.

would demand a strong display of air power along the frontier to ensure that the East German forces could make no mistake about our intentions and the consequences of resistance or of trespassing on West German territory. The principles we have been discussing apply with equal force to the Berlin situation but it is dangerously complicated by the particular risk of a direct clash with Russian forces, and because of the high stakes already placed upon the security of both West and East Germany. This clearly leaves precious little room for military manoeuvre short of all-out war.

Ideally all these forces should be endowed with unimpaired strategic and tactical air mobility, and as this becomes technically feasible no chance should be lost of attaining it. We British already hold echelons of suitably equipped airborne and other ground troops standing by in Britain to support local garrisons overseas, but owing to technical limitations and financial exigency our available air transport capacity must still be supplemented by a system of pre-stocking at suitable bases within striking range of the potential trouble areas. And such bases could not be effectively replaced by sea or air bases alone. We also have a limited number of carriers equipped for air operations and commando landings by helicopter. Useful as these are, they may take longer to bring to bear than spearhead elements flown from local garrisons, unless they happen to be on the spot already; they can only support their operations for a few days at a time; and both air and commando operations are confined in the one case to fighter and in the other to comparatively limited helicopter ranges. Moreover, seaborne maritime operations are subject to a local submarine threat which is tending to increase both in scale and technical difficulty. Much of their task would be better fulfilled by medium range (1,500 m.) V.T.O.L. air transports in due course. Meanwhile our tactical air forces are deployed on internal security duties throughout the world, but can quickly be concentrated to meet a major threat and can subsequently be reinforced in the tactical arena along our strategic air routes by squadrons from Britain. These routes must of course be kept open in accordance with the range of the aircraft of the day.

Thus the forces we have at our disposal to act as the supporting element in a limited war force are comparatively small and are in part deployed in "watch and ward" and internal security duties, and in part available for concentration when necessary. Irrespective of political factors therefore we do not foresee a limited war situation of any gravity in which the British would not be extremely reluctant to "go it alone". Nevertheless we are ready to make our contribution whenever and wherever a threat arises and we could not afford to make it impossible to take independent action if absolutely necessary by, for instance, divesting ourselves of our own global deterrent force. Indeed, the vital need for a global deterrent force under which to conduct limited war in the modern strategic environment remains one of the strongest arguments for the continued maintenance of a British global deterrent.

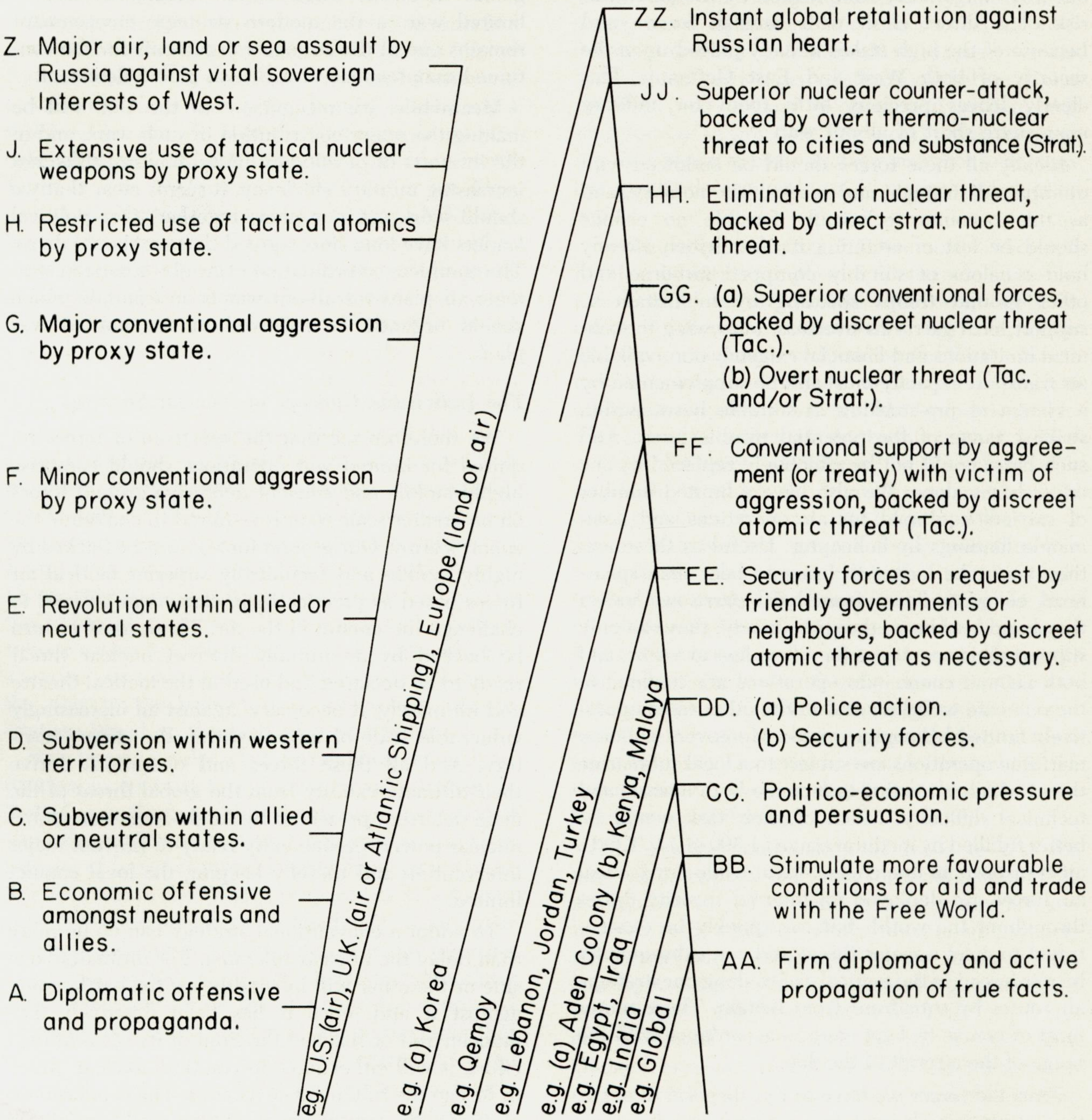
Meanwhile, we recognize that the U.S. will be making the major contribution in such wars, and in the interests of developing unity, limiting risks and increasing military efficiency, it seems clear that we should work out our plans together. Our political leaders have long since agreed that we should do so. The complete co-ordination of Anglo-American strategic air plans for all-out war is an example which should urgently be followed in our limited war plans.

The Indivisible Concept of Nuclear Strategy

We therefore see that the spectrum of forces required for limited war operations should comprise highly mobile and efficient defensive ground forces on no greater scale than is required to challenge the enemy's army. Our ground forces must be backed by highly mobile and technically superior tactical air forces based as practicable in carriers or on land to challenge the enemy in the air. These must in turn be backed by an initially discreet nuclear threat ready to be declared and used in the tactical theatre and ultimately, if necessary, against an increasingly vulnerable scale of targets within the enemy territory. And all these forces and operations derive their ultimate validity from the global threat of the main deterrent presented by Anglo-American global nuclear power, permanently ready to prevent major intervention and thereby keeping the local conflict limited.

To adopt a conventional strategy can do no more than delay the nuclear dilemma. For ultimately one side or the other will inevitably see the battle going against it and, once it has been decisively outmanoeuvred or reached the limit of its conventional effort, it will either have to resort to nuclear attack or forego the fulfilment of its aims. The conclusion is clear. Quite simply we might as well accept the manifest truth that, as in unlimited war, so in limited war power today derives its force from global nuclear air power, and not from ancillary concentrations of men or gunpowder, however necessary these may be. We can avoid falling between two stools by conforming to a methodical nuclear strategy from

Containment of Ascending Scale of Communist Aggression



N.B. In this context a "discreet" nuclear threat means holding a decisive nuclear threat within range without overtly declaring its potential uses.

the very start, which will manoeuvre the enemy into the self-same and irrevocable nuclear dilemma — but *without* the vast cost, effort and cumbersome paraphernalia of prolonged conventional warfare, and *with* the utmost speed and certainty. As Clausewitz has said: "Pursue one great decisive aim with force and determination!" Nerve-racking as this procedure may be, the contest between East and West may in the long run be decided in favour of those with the strongest nerves, for "strong nerves" and "survival" are just as synonymous as "weak nerves" and "submission".

This concept of limited war in terms of an ascending scale of power remains valid irrespective of Soviet so-called nuclear "sufficiency", and embraces every variety of limited war situation, whether we alone or both sides possess nuclear weapons, whether we choose temporarily to limit our action to conventional weapons, or whether the political factors dictate that we should restrain, punish or destroy the enemy and his power to continue his aggression. And certainly one of the golden keys to these all-embracing politico-military potentialities appears to be highly flexible air power comprising tactical fighter, strike and reconnaissance units; tactical and strategic transport elements; and a range of nuclear delivery systems of the tactical, and ultimately the global class.

In sum therefore we see that, within our grand strategic concept of Global Strategy, both our limited and unlimited war potential are integral parts of a single and indivisible strategic concept. For in the last analysis power is indivisible, and no form of political manoeuvre or graduated deterrent theory or refusal to face the true military implications of nuclear strategy can evade the consequences of nuclear power upon our political, economic and military freedom of action.

The price of failing to face these nuclear facts of life, is the slow but sure surrender of all power and the abandonment of our peoples and their aspirations to the tender mercies of our enemies. On the other hand, if we do face up to these facts we have the chance of strengthening our negotiating position until we can persuade the Communists that no practical gain can come even of limited aggression in any part of the world. Indeed, we may hope that by a combination of political, economic and military strength to demonstrate that organized war on the limited as much as on the unlimited scale can no longer serve any useful political purpose. And to outlaw war is a major step on the path to effective world Government and the peaceful settlement of all issues at the conference table.

CONCLUDING REFLECTIONS

In all writings and theories one cannot escape the sense of over-simplification, but I would contend that the ideas formulated by Clausewitz have considerable application to our own problems. Wars are limited or unlimited by virtue of the political objectives they seek to attain. This basic concept remains as valid today as ever. For the first time in history the peoples and governments of the world already perceive that their "relative political demands or objectives" can no longer be achieved by unlimited war. The means of war have become totally disproportionate to any conceivably rational political ends. That is the dominant fact today. Therefore political objectives must be attained by means short of unlimited war.

However, the factors that may be exploited to keep war limited have altered substantially. For instance, any consideration of "the geographical situation of the states and their respective allies" reveals that the more or less self-contained continental and maritime systems of the past have lost their political, economic and military validity in theory and practice. Whether communications systems are internal or external or whether a nation's economy is based on sea, land or air systems of transportation or whether one or other element is exploited for warlike purposes have become little more than technical trivia rather than the major strategic influences they once were. In fact, geography can no longer set limits on war by providing a shield against an unlimited challenge and all its most violent consequences.

Whereas the influence of geography in limiting wars has receded under the impact of technological progress, the influence of "such moral factors as the strength and will of the governments and peoples" has been greatly enhanced. The technical means of disseminating information and ideas have greatly increased the knowledge and power of popular opinion, and sharpened the battle for men's minds. The fear of the consequences of unlimited war may be increasingly reflected in the fear of limited war expanding into unlimited war. Indeed, if the Soviets can be brought to recognize that even a limited aggression by proxy will if necessary be opposed by nuclear retaliation they must soon recognize that no limited political objective can be attained unless they too are prepared to back their Trojan horse with nuclear weapons and risk the unequivocal dangers of limited war expanding into a suicidal unlimited conflict for issues less than vital to themselves. Thus, by our determined resistance to military

aggression, we may yet consign limited war also as a rational instrument of policy to the annals of history. Consequently, it is precisely to the political and moral sphere that we may hope progressively to remove the main battleground, and here every psychological, ethical and economic catalyst may be exploited to guide the world towards universal security and a stable world government, in which the will of mankind is not shackled to the will of a few demagogues.

But we have far to go and many hardships to bear before the whole oppressive emotion of present fear can be converted into the logic of future hopes and aspirations. We dare not neglect the study of war until the battleground ultimately gives way to the conference table. The principles of war apply as ever today to "acts of violence to compel the enemy to our will". These principles cannot recognize artificial distinctions between conventional and nuclear weapons, nor idealistic international contracts as to limiting their exploitation, that do not depend fundamentally upon the irrevocable dictates of power. Failure to face the bare facts is far more to be feared than the stark grimace of reality. Short of general disarmament, "Banning the Bomb" can only lead to perdition. By the fortitude of the free men of our own era we may yet rescue the world from the suicidal abyss that yawns before it; and it is not beyond the bounds of fantasy to hope that the technological ingenuity of future generations will herald a new millennium of peace and fulfilment for the human race.

"Thrice is he armed that hath his quarrel just
And be but naked, though locked up in steel,
Whose conscience with injustice is corrupted."

SHAKESPEARE. HENRY VI.

"I am afraid the new phrase, "peaceful co-existence", means just that: You exist if you are too tough to tackle. You perish if you are weak and unready."

— HAROLD E. TALBOTT, *ex-Secretary of the U.S. Air Force.*

R.C.A.F. STAFF COLLEGE JOURNAL ESSAY CONTEST FOR 1960

The R.C.A.F. Staff College Journal Essay Contest will be held again in 1960. The contest is open to all members or former members of the Canadian Armed Forces and the Civil Service, and the prize of $250.00 is awarded for an unsolicited essay, not exceeding 5,000 words in length, likely to stimulate thought on military, and particularly air force, matters. The field thus includes strategy, operations, training, logistics, personnel administration, technical services, research and production, and any other related field. In addition to the prize money, the writer of the winning essay will be paid at the usual rate of three cents per word if his work is published in the Journal. If possible, a representative group of these essays considered to be worthy of honourable mention will also be printed in the Journal. Authors of these essays will be reimbursed at the same rate.

The Board of Directors of the Journal will appoint the judges, whose decision will be final. If no essay meets the standard of excellence set by the judges, the right to make no award will be reserved by them. Essays are not to contain classified information. Manuscripts must reach the Editor of the Journal by 1 June, 1960.

Logistics in the Missile Age

MAJOR-GENERAL FRANK S. BESSON, JR.

Major-General F. S. Besson, Jr., was educated at the U.S. Military Academy and the Massachusetts Institute of Technology. He joined the U.S. Army in 1932. Throughout his career he has held many important posts in Army transportation and logistics, and in 1954 became Assistant Chief of Staff for Logistics, SHAPE. He is presently Chief of Transportation, U.S. Army.

THE advent of thermonuclear warfare does not create a requirement for an entirely new science of logistics. But it does require sharp modifications in present concepts. Logistical changes necessary in limited war are great; in general war they are tremendous. This article analyzes some of these conceptual changes. Though logistics will be defined broadly, due to space limitations, it will be necessary to concentrate primarily on the aspects of supply dispersal and mobility of transportation.

The Evolution of Logistics

The word "logistics" is derived from the Greek *logistikos*, which means "skilled in calculation". The Romans had a military official called a *logista* who was probably skilled in military mathematics. Since that time, logistics has had many definitions, narrow and broad. I prefer the broad definition in which logistics embraces the greater part of the business of modern war. It is everything that needs to be done to place and keep a fighting army in the field in combat. Logistics starts with raw material and raw manpower; its end product is a trained and equipped fighting force.

From early times, victory usually has gone to the fast moving, hard-hitting, self-contained force. Hannibal, ravaging Italy with lightning raids, lived off the country; the Huns moved thousands of miles on horseback, carrying their weapons and subsisting on mare's milk. Our Civil War heroes, as Jackson and Sherman, moved quickly and travelled light.

For the most part, the tendency of modern war has been for supporting trains to grow heavy and sluggish. The mobile supply *train* of the self-contained Army gave way to the "logistical tail". With the growing weight of weapons and materiel, most supplies no longer moved with the Army. The increasingly heavy logistical tail was anchored to sources of supply. Freight shuttled continuously forward. Support depots were created to supplement the "tail" and protect against critical shortages. Large scale warfare demanded huge accumulations – requiring long build-up – to provide the crushing force and sustained impetus to bring victory.

World War I, with the front stabilized by machine guns and barbed wire, created favorable conditions for this system of supply. Again, during World War II, we relied on thick, slow-moving pipelines and huge depots with immense quantities of material. But the return to mobility in World War II created incredible logistical problems. From the supply point of view, a breakthrough by our own troops was almost as serious as a breakthrough by the enemy. The Army logistical tail was stretched to the breaking point. As the tail grew heavier and longer, it consumed huge amounts of supplies and transportation merely to maintain it. At the end of World War II, there were more Army goods in the supply line than had been consumed in training and combat during the entire war.

Luckily, as it turned out, this enormous surplus made possible our logistical effort in the Korean War. Logistically speaking, the Korean War is second only to World War II. Tonnages shipped from the United States to the Far East during 37 months of conflict totalled 31.5 million measurement tons. This is only one quarter of the tons shipped in World War II, but twice the amount shipped to support American Forces in France during World War I. Without the cushion of World War II supplies, it would have been more difficult to support combat operations in Korea. Fundamentally, however, the logistical system for Korea was similar to that of World War II.

Logistics in Transition

But the advent of nuclear warfare and the return to mobile and flexible battlefields, in some measure, calls for changes in logistics. Missiles can destroy major installations, and concentrations of men and

supplies. Today, not even the sanctuary of the United States homeland provides a safe arsenal. In earlier wars, we could count on 3,000 miles of ocean to give us lead time to build up supporting industries. In addition, air superiority and solid front lines gave rear areas some security. But today, the Army must be prepared to support combat forces more continuously over greater distances, and in the face of more obstructions than ever before. Modern weapons require not only new concepts of strategy and tactics, but also of logistics. Logistics is not a staple commodity that can be carried over from one war to another. The logistician must keep pace with changing times.

Yet this does not mean that we must discard everything we have learned from our experience in three past wars. We do not need to throw away the book. It would be like throwing away the baby with the dirty bath water. Rather, we must build upon the past and modify it so that it can meet the challenges of the new kind of warfare.

This is easier said than done, for the pattern of future wars is obscure. Yet this obscurity offers a challenge for imaginative planning, rather than an excuse for a "do-nothing" attitude. It is true that inflexible planning based on false assumptions of the enemy's course of action is dangerous. France was lulled into false security with a Maginot Line based on experiences of trench warfare in World War I. The British built the guns of Singapore to fire seaward and were unprepared for the Japanese attack through the jungle. The Romans, who studied the art of war, developed from their rich experience a maxim that it was a bad plan that did not allow for modifications. But the very fact that the nature of future war is hard to predict provides an opportunity for creative logistics, realistic and flexible enough to meet different and fluctuating war situations.

In limited war, the logistician must think in terms of a regulated amount of effort, delivered quickly to the point of conflict. The important factor is speed of reaction – getting enough men and the right kind of supplies where needed fast enough to meet the situation. The degree of effort may vary from a show of force, as in Lebanon, to a major conflict, as in Korea. In each case, the objectives were limited and the degree of effort tailored accordingly.

Though some logistical problems are similar both in limited war and general war, there are differences. For the most part, I shall discuss logistics in a general war situation. It has been said that the only logistics problem in a general nuclear war is, "Who will be left to bury the dead?". President Eisenhower, in a recent speech, warned that a general war may mean the end of civilization. The free world wants, above all else, to avoid a general war. Ironically, the path to prevention is through "determined deterrence," – by making clear that we have the power to blow the Soviet Union into oblivion.

Such "deterrent" power does not come cheaply. There are no bargain basements for nuclear weapons and long range missiles. The B-17 in World War II cost, in mass production, $150,000. The B-52 of today costs $8,000,000. The price tag of the Redstone, a relatively small 200-mile missile, is about a million dollars. And this is for the plane or missile only – not the whole supporting weapon system. The appetite of modern war is so voracious, that not even the wealthiest nation can support logistically all desirable programs. We must decide what is most necessary and allocate our resources in a way to concentrate on first things first.

If deterrence fails, and the "long shot" of a general war becomes a reality, the Communists will inflict tremendous damage. They would have an initial advantage, as we would not strike the first blow. Their attacking aircraft and missiles may destroy much of our productive capacity.

Supply in Modern War

In a general war, supply on hand is a crucial problem. Gone are the days when farmers and frontiersmen could leave their ploughs, trudge off to battle and defeat the enemy. In wars of the future, men and equipment must be ready at the start of the war. For example, in World War II, it took nearly four years to develop and mass produce the landing craft for the cross-channel attack. The greater range of missiles and the heightened tempo of nuclear destruction will no longer allow such lengthy preparations. Counter-measures must be taken within days, hours, and even minutes if they are to be effective. There must be on hand a balanced stockpile of all types of weapons and supplies. If we can't reach out and touch it when the war starts, chances are that it won't do us much good.

In providing these reserves, there are two factors that complicate the equation. First, the revolution in warfare makes many weapons obsolete even before they reach the mass production stage. Today, "lead time" on major weapons runs as long as five to ten years. Because research and development are vital in keeping our equipment efficient, plans must be made years ahead. Mass production of "hardware"

that can be used immediately must be balanced with continued experiments with equipment for the future.

The second factor is that the United States cannot think of itself alone. Modern war is global, reaching to the furthermost corners of our world. Modern war is in a sense a joint operation. Twenty-two nations fought together in Korea. Valuable lessons were learned for logistical coordination. The day is gone when logisticians can take account of the requirements of their nation only. Our position is much like the story in ancient literature of three men in a boat, none of whom could swim. One man took out an auger and started to bore a hole in the boat. When the others protested, he told them to mind their own business. "I am boring a hole beneath my own seat only." "But," shouted the other two, "we are *all* in the same boat." This two thousand year old story is never more true than today. Radiation does not recognize national boundaries. Not only must we have reserves of weapons for ourselves, but both the resources and the willingness to cooperate with others in our boat.

In this sense, we have one advantage over the Soviet Union. Our alliance, while far from perfect, is at least voluntary. In the Soviet Union, the loyalty of many of the Satellite nations to Communism is suspect.

In building our reserves, it would be a tragedy to concentrate them in a way to provide worthwhile targets. The cost of intercontinental missiles and their chance of landing on target is such, that only huge depot complexes in North America would be worth shooting at. Moderate size depots, carrying balanced stocks of critical supplies, should be dispersed geographically outside probable target areas. This would give some measure of protection.

The situation within the theater of operations becomes entirely different. Cheaper enemy missiles can be fired with greater accuracy. Depots become worthwhile atomic targets. Dispersal, while important in the home country, is more essential to survival in the overseas theater. Theater depots should carry a cross section of all supplies needed for combat. If one depot is knocked out, others could be called on to meet the need.

There are two sides to military supply. Supplies on hand are usually called stockage levels. Replacement is termed resupply. Stockage levels and resupply are inextricably interwoven. Stockage levels must be sufficient to support operations until resupply arrives. Stock levels are largely determined by distance, frequency of demand, and means of available transportation. Another factor is the need for reserves as insurance against interruption from enemy action and from other sources.

Over and over again, history shows that weapons and materials have been produced at great sacrifice and transported over great distances, only to remain unused when needed, because the commander did not know they were available. Lieutenant General LeRoy Lutes, World War II ASF Director of Operations, visited the Southwest Pacific theater in August 1943 and reported: "It was practically impossible for me to determine what items are critically short in this theater. A shortage of some item at Port Moresby does not mean that the item is short in the Southwest Pacific area . . . No one can tell whether a shortage is due to a failure in the States or to an inability to get the item forward in some Australian base."

The quickened tempo and increased complexity of modern war has made it even more difficult to keep track of what is available for combat. The additional requirement for dispersion and duplication of stocks is equivalent to the piling of Pelion on Ossa. This fantastic feat, described by Homer, placed one high mountain on top of another so that the Greek heaven of Olympus might be attained. The allusion may still be apt if carried a little further. In modern times the Olympian goal of using war supplies effectively might possibly be reached through the use of electronic data processing both at home and in the theater of operations. Electronics may make feasible the instant reporting of what has been destroyed, what is available and where stocks may be located. These electronic facilities would be duplicated and dispersed so that if one stock control point is knocked out, another can take its place.

Transportation

Even with streamlined supply techniques and electronic reporting, stocks would be useless unless they could be transported to the right place and when needed. Supply and Transportation complement each other. An important part of any discussion of logistics is the analysis of transportation.

In a general war, rail and highway systems in North America, for the most part, are not worthwhile atomic targets. The long range missile with a nuclear warhead is too costly. It is true that the breakdown of transportation was among the major causes for the collapse of Nazi Germany in World War II. On the eve of surrender, carloadings in Germany had fallen to 15% of normal. Though the German transport system was brought down in ruin,

the amazing feature is the repeated bombings and attacks it absorbed. Breaks were repeatedly repaired and bypassed. Locomotives, rail cars and trucks had to be hunted down and destroyed almost individually. Even bridges knocked out were put back in action within a week. In North Korea, too, though their meager transport system was under constant attack, the Communists were able to support large scale war operations. While atomic bombs do more damage than conventional weapons, they do not pay off when aimed at targets like rails and roads, or when equipment is dispersed over a wide area. Even though Hiroshima was almost wiped off the map by an atomic bomb, rail service operated through the devastated city eighteen hours after the bomb fell.

The nuclear bombs of today are many times more powerful than the bomb which fell on Hiroshima. Details of their destructive power are largely classified information. But there is enough general knowledge to provide a fairly satisfactory analysis.

There are three types of effects from nuclear bombs all of which destroy life and property. First is the effect of prompt radiation. While dangerous to persons, radiation may be relatively short-lived and does not usually prevent rehabilitation within a reasonable period if manpower and material are available. Second are the thermonuclear effects followed by a blast and frequently a fire storm which will devastate an area of many square miles. Third, the blast itself will dig a crater roughly circular in shape with a diameter ranging up to and above a thousand yards. The crater is more or less permanent, and usually contaminated by residual radiation. It will be a serious obstacle to rebuilding and repair.

Because of the circular nature of nuclear damage, atom bombs are not particularly suitable for linear targets such as rail lines and highways. Conventional weapons of a weight equivalent to yield the over-all effect of a nuclear bomb would do more damage. The use of atomic bombs against linear targets is not only economically unfeasible but also creates an unnecessary fall-out hazard. The risks and costs are not worth the result. Possibly there are exceptions. Destruction of transportation may be only a by-product or bonus in a nuclear attack made against a prime target for other reasons. And an atom bomb at some geographic barrier like a mountain pass or critical bridge may wreck transportation for long periods of time.

Generalizations are often dangerous. They tend to oversimplify. But it is reasonable to assume that since rails and highways can function in some manner unless continuously and almost repeatedly attacked, they do not make good atomic targets. The problems of these modes of transports will not be too much different from those of World War II and Korea.

By contrast, areas such as ports are remunerative nuclear targets. Ports can absorb heavy conventional bombing and still function. Masonry piers are hard to damage. Cranes are hard to hit and their destruction does not prevent ship discharge since most vessels have their own cargo handling gear. But a thermonuclear bomb can wreck a port. The larger the port, the better the target. The Port of New York with docks and equipment to handle annually hundreds of millions of tons of cargo is a choice morsel. The Delaware River ports, Baltimore, Hampton Roads, New Orleans, the San Francisco Bay area, Montreal — all have their attractions to nuclear missile-men. The chances are that in a nuclear war, enemy atomics would deny us the use of our major ports.

However, it would be nearly impossible to knock out our many secondary ports. Transportation Terminal Commands would decide the use of minor ports, or even beaches, whenever a major harbor complex was put out of action. Cargo would move overseas in spite of damage to North American installations.

There are three major areas where logisticians must develop concepts to improve transportation responsiveness to military requirements. These are first, to increase strategic mobility; second, to improve over-the-beach mobility; and third, to improve battlefield mobility.

Strategic Mobility

The Air Force provides strategic air lift. Air transport will become increasingly important. In Korea, though it played a dramatic role, air transport carried only 1% of our overseas cargo. The cargo ratio may go up to 4% or 5%. It is becoming the dominant mode for movement of personnel. But in the foreseeable future, air lift for most cargo is not feasible. Its use will be selective and usually limited to critical materiel.

Most equipment and supplies moving overseas will go by ship. A major need is for qualitative improvements. Modern cargo vessels are incorporating such features as greater accessibility to cargo through bigger hatches and more logical interior arrangements. Speed is being increased to lessen vulnerability to enemy submarines and to shorten the supply line. Cargo handling gear is being im-

proved to handle heavy or cumbersome lifts and to take care of lift-on, lift-off cargo and containers.

A large portion of military dry cargo is on wheels or tracks. Vehicles should move on and off ship under their own power. The United States Army and Navy have cooperated in developing roll-on, roll-off ships. There are two such ships in service today, the *Comet* and the *Taurus*. The *Comet* on a recent voyage discharged 8,000 tons of cargo and loaded 4,000 tons for the return voyage in less than twelve hours. A conventional ship would have taken several days to do the same job.

An important contribution to strategic mobility is the development of transportation concepts which make the cargo itself easier to move. Containerization is one truly revolutionary concept which does for transportation what the development of interchangeable parts did for mass production. It provides interchangeable units of transportation which can be transferred from mode to mode without breaking bulk. It allows fast and secure handling, and shipment of supplies from factory to soldier. Seven years ago the United States Army Transportation Corps purchased 1,000 containers of about seven feet on a side. Today there are over 51,000 of these boxes scattered all over the world. "Piggyback," in which trailer vans ride the railroads, and "fishyback" where vans take to water are forms of containerization which hold promise for enhancing mobility.

Over-the-Beach Mobility

In a future war, the enemy will probably succeed in denying us the use of overseas ports. This is what the Germans tried to do during World War II. The Nazis hoped to thwart the invasion of Europe in 1944 by attacking our sea transportation and by making untenable the use of the Channel ports. The Allies frustrated Hitler's plans through the effective use of beach landings and amphibians. DUKWs carried an estimated 40% of the cargo during the operation at Omaha and Utah beaches in the invasion of Normandy.

The new factor in nuclear war is that quantitatively nuclear weapons carry so much more punch that never again can so many ships and supplies crowd together as off the Normandy beaches. Even amphibians must be dispersed. Unloading will be from cargo carriers spread over a wide area. Roll-on, roll-off ships will discharge vehicles moving under their own power and ready for use. Self-erecting piers can be put up quickly to help with the unloading. If a pier were not available, vehicles could be driven onto the new type beach lighter which would haul them to the beach. The United States Army Transportation Corp is now testing a 338 foot lighter which carries 600 tons of vehicles or 1,000 tons of general cargo. The lighter has cycloidel propellers for maneuverability and a hydraulic retracting ram in the bow to push it off the beach.

Amphibians will be called on to a far greater extent than in World War II. They will unload conventional ships dispersed off the shore. They have the tremendous advantage that they can move *across the beach* without a break at the shoreline. They can carry cargo to inland depots, leaving the beach clean. The only trouble with amphibians is that at present there are not enough of them.

Today, the Army Transportation Corps is using the BARC (Barge, Amphibious, Resupply, Cargo), a 100 ton amphibious monster which lugs from 60 to 100 tons of cargo out of the ocean and up on dry land. It has a loaded speed of 7 MPH at sea and 10 miles an hour on land. A smaller member of the same family is the LARC (Lighter, Amphibious, Resupply, Cargo). One version will carry five tons of cargo, the other fifteen tons. It is also possible that new developments in hydro-foil craft will provide greater beach mobility.

Under certain circumstances the helicopter can be used advantageously in beach landings. Helicopters are expensive in terms of manpower, money and fuel. But there are situations in war where a commander must say, "To hell with the cost. The job must be done." Helicopters can be used effectively where the payload they carry is critical. They can snatch cargo in nets or containers from ship decks and drop them in vehicles which will haul them directly to the point needed. Logisticians envisage a flying crane which would unload container ships direct to cross-country vehicles which would haul them to the using unit.

Battlefield Mobility

Leaving the beaches, the next great problem is logistics on an atomic battlefield. With radar it is more difficult to move without detection and the enemy can now deliver more accurate fire at greater ranges with increased effectiveness. To meet this situation, troops must be widely dispersed and remain as far as possible under protective cover. Yet they must be able to come together swiftly for offensive action of their own.

There is no one answer to all these problems. Troops must have equipment to construct fortifications rapidly. They should have communication

facilities to call on missile units to fire from far to the rear. Armored carriers should be able to move battle groups and delivery limited quantities of supplies.

Transportation in wartime must be able to move without roads. Examples of items which the U.S. Army Transportation Corps is using to achieve cross-country mobility are the Rolling Fluid Transporter and the Overland Train. The Rolling Fluid Transporter is a large tire which carries a cargo of fuel, water, or other liquid inside. These transporters consist of two wheels five feet high and three and a half feet wide, with necessary connections and pumps. Each tire holds five hundred gallons. It is mounted on an axle with a towing assembly attached. It can be towed anywhere a prime mover can go. It will float or can be dropped by air. This is an important contribution to battlefield mobility. In World War II, Patton might not have outrun his fuel supply if the Rolling Fluid Transporter had been available.

Another promising development in cross-country movement is the Overland Train. It is mounted on giant tires — ten feet tall. It consists of a control car, living quarters, ten trailers, and a power car. The train is 200 feet long and carries 150 tons of cargo, which is as much as half a dozen of the big trailer vans you see on the highway. Experiments are being made to run it with atomic power, thus adding to its range. It travels cross-country and seems to float on its huge tires across ice, snow, swamps and mud at speeds of up to twenty miles an hour.

These and other projects will bring about great improvement in ground mobility. But the greatest potential lies in the air. In addition to the great airplanes for bombing and long distance transportation, there is a family of planes that fly, so to speak, with one foot on the ground. Helicopters and fixed wing vehicles for short take-off and vertical take-off serve many useful purposes. They do not need elaborate supporting installations. They are able to take off in a cow pasture and come down in a potato patch. They perform a wide variety of logistical as well as combat duties.

The Army is entering a period when its aircraft can move persons and supplies in the battle area without relying on airfields or roads. Some of our projects are like the turbine powered *Vertol H-21* that gives much greater lift per pound of engine. The *Caribou* lifts 7300 pounds at 148 knot cruising speed and employs a rear loading ramp. The cargo compartment makes a good missile carrier. It requires relatively short take-off and landing facilities. The aerial jeep is based on direct lift propulsion. It carries one or two persons with light weapons and hovers close to the earth, darting around, over and behind obstacles of terrain. Another example of efforts to increase battlefield mobility is the *Avro Car*. This vehicle seems to have stepped out of the comic strips. It is based on an "air cushion effect." This is a narrow layer of high pressure air on the surface of the earth. A column of air directed downward gives the vehicle greater lifting power than a helicopter. These and other air vehicles help armies jump over nature's obstacles. They are introducing to the battlefield a new concept — vertical mobility.

Austerity

There is another vital aspect in the attainment of mobility. It is *austerity*. In nuclear war there is little possibility of delivering the huge quantities of material to which our troops were accustomed in World War II. Armies must live on less.

In the past, the big tonnages were in ammunition, food and fuel. In World War II, more tons of ammunition were manufactured and transported than any other item. Nuclear weapons yield far greater explosive power with only the tiniest fraction of the weight of conventional ammunition. Longer range atomic weapons will be far to the rear, while very small, light weight and easily transportable atomic weapons and ammunition will go with the troops. Less ammunition will need to be moved.

Food has always presented supply and transportation problems. Dehydration and irradiation will reduce bulk and the need of refrigeration. It will also reduce labor in preparation of food. Troops will eat better and men can be placed in combat instead of kitchen duty.

To reduce fuel consumption, engines are being converted to Diesel or to modified Diesel compression ignition multi-fuel systems. These provide substantial savings. But the ultimate long range solution will be to operate vehicles on atomic power.

There are many similar efforts to reduce tonnages. A cow pasture does not consume much equipment, and will serve the same purpose as an airfield for helicopters and short take-off and landing air vehicles. Scientists and production experts are working on vehicles and equipment which require little maintenance. Lifetime sealed parts are a step in this direction. Logisticians have set as their goal equipment similar to the *Deacon's Masterpiece* in Oliver Wendell Holmes' famous poem about

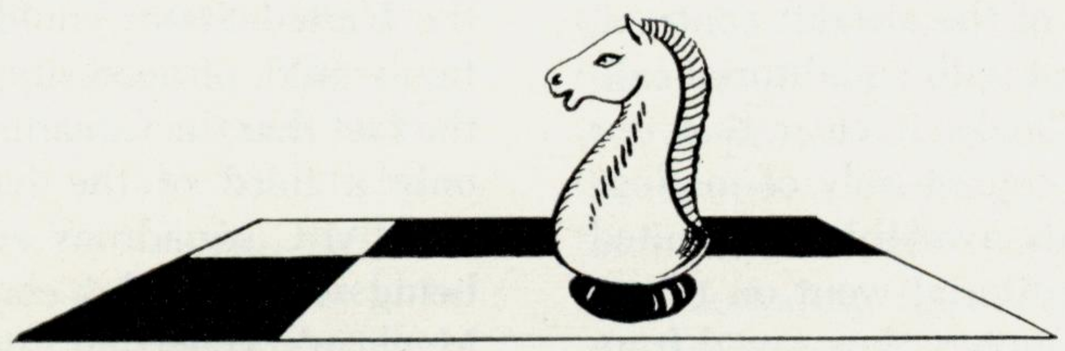
" . . . . the wonderful one-hoss shay,
That was built in such a logical way
It ran a hundred years to a day."

Progress is being made in building vehicles and other equipment which are almost trouble free and rarely break down. This will reduce the need for technicians. Large inventories of spare parts will become unnecessary. These and many other measures to reduce the need for supplies will help the logistician meet the problems of modern war.

Conclusion

Armies must have a lean and hungry look. In modern war, the manpower and resources of a nation are translated into supply and transportation for military use. It is a costly process. Though efficiency must not be impaired, and essential equipment must be delivered where it is needed, all fat must be trimmed. Fat men can't move very fast. Neither do fat armies – and speed and mobility are prerequisites to survival in a nuclear war.

Throughout history, many great military leaders have worked on the principle of travelling light. In this scientific age of phenomenal equipment with all kinds of complex refinements, austerity is a harder job than ever before. It is a challenge to logistician and commander alike. But it must be accomplished. In the words of a cavalry leader in the American Civil War, "The road to glory is not travelled with much baggage."



Serving Industry for over 20 years with precision engineering

Bata Engineering produces precision-machined components and assemblies for both jet-powered and propeller-driven aircraft, including hydraulics, pneumatics, landing gear elements and air frame structures.

BATA ENGINEERING

DIVISION OF BATA SHOE COMPANY OF CANADA LIMITED, BATAWA, ONTARIO

United Nations Armed Force "The Great Illusion"

PETER STURSBERG

Mr. Peter Stursberg was educated at McGill University. He became News Editor for the CBC in 1941 and a CBC War Correspondent in 1943. After the war he was associated with the "Daily Herald" in London, England, as a roving foreign correspondent. Mr. Stursberg was UN correspondent for the CBC from 1950 to 1956. Since then he has been the Ottawa correspondent of the Toronto "Daily Star". Mr. Stursberg is the author of "Journey into Victory" which was published in 1944.

IN RETROSPECT, the scrapping of the Avro CF105 Arrow program, with all its after-effects, has been a bad psychological blow. It seems to have taken the stuffing out of a good many Canadians and made them look toward neutralism, or some such schemes, for a way out.

Just after the termination of the aircraft contract, Maclean's Magazine came out with an editorial calling on the government to "make it clear that our ultimate establishment will consist only of modest, modestly armed mobile units available for United Nations police duty". The editorial went on to say that every last dollar of the money thus saved from the defence budget should be spent "in aid to less favored countries".

Such an opinion, expressed only a few months ago, would have resulted in tolerant smiles and would have had as much influence as a similar plea from the Canadian Association for the United Nations. But that was before the traumatic shock of the Arrow's abandonment. A dream was ended and the awakening was rude. It was now evident that, in the space age, a country of Canada's size and fortune could not develop a major weapon of its own. If so, why have any weapons at all? Why become a satellite dependent on a Great Power for arms and ammunition?

The closer integration with the United States which followed the collapse of the Avro project served to show the appalling cost of push button warfare and the sort-of instantaneous defence which NORAD represents. General Earl Partridge, the former commander, in a widely publicized interview, said that NORAD'S telephone bill alone in 1957 came to $24,000,000 and would reach $150,000,000 a year by the sixties. And so it would, if a single command had the telephone system of a country, and NORAD has its own long distance lines to Alaska and the DEW Line and elsewhere on the continent.

Quite obviously, this would be an unequal partnership, for NORAD is a defence system which only the United States could afford. Canada's contribution would, of necessity, have to be small – there is the fact that the Canadian government is able to pay only a third of the installation costs of the two BOMARC squadrons and their SAGE control unit being set up in this country. "In a military sense," Maclean's Magazine said, "the world has ceased to consist of Big Powers, Middle Powers and Small Powers. It consists only of Powers and Non-Powers." And this national journal found Canada to be a Non-Power.

A Ballistic Missile Early Warning System is being built, and a single B-MEWS station, which will have a screen larger than a football field, will cost $400,000,000, or almost as much as the whole of the DEW Line. Whether it will ever be able to sight an ICBM in flight is a moot question; if it does, it will provide no more than 15 to 20 minutes warning. At present, there is no defence against the rocket with its nuclear warhead, and the problem of destroying it in mid-space seems insurmountable; it is stated by General Partridge to be more difficult than the problem of shooting down a rifle bullet fired a mile away with another rifle bullet.

No wonder that people should throw up their hands and ask if Canada could not possibly opt out and become a neutralist state. Some are interested in the suggestion by a prominent statesman that the Arctic regions should be demilitarized and that Canada should be a buffer state between the U.S.A.

and the U.S.S.R. Many more would like to see the government base its military policy on the United Nations, as Maclean's Magazine has proposed.

But what is meant by "United Nations Police Duty"?

Does the magazine have in mind the forces which were used in the Korean War, for the latter was called a police action?

Or is it thinking about the United Nations Emergency Force in the Middle East, which is, as its name indicates, not a permanent organization?

When I was at the United Nations, I used to watch a curious ceremony which marked the end of one attempt to form an international force. My office was on the fourth floor of the thirty-eight storey building, overlooking the fountain and the library, a low structure on the south side, and, twice a month, I used to see several cars draw up on the curved driveway beneath my window. They were not the pretentious cars of the delegates and the permanent representatives, but the sort-of two or three year old automobiles in the low priced field assigned to minor officials, and out of them stepped a number of colonels. The first to arrive would wait on the sidewait for the others, if it were a fine day. The Russians who always seemed to come in pairs would stand squarely together, their epaulettes sticking out like primordial wings. The Frenchman, for there was only one, would lean against the windshield to talk to the civilian driver of his car. Then, they would saunter into the Library Building, one delegation at a time. A little later, they would come out and salute each other and step into their cars and disappear into the traffic on First Avenue. Sometimes the British officer would stay behind with the American officer and talk to him as though he had something really important to impart.

Nobody knew precisely what these colonels did at their meeting as it was held behind closed doors, but everyone knew they did nothing. They were members of the Security Council's Military Staff Committee which had failed to establish an international force more than a decade ago, but they went on meeting twice a month because of the rules. They are continuing to do so, and their action has become a ritual which is impossible to break.

The Security Council has, according to the Charter of the United Nations, "primary responsibility for maintenance of international peace and security." The five permanent members are actually named in this extraordinary international document. So, come what may, come disaster and decline and even disappearance, the United States, the Soviet Union, the United Kingdom, France and China will continue to be regarded as Great Powers with the right to veto as long as the United Nations remains. For the Security Council to work, these five must work together; they must agree to any action for action requires the "concurring votes of the permanent members". It is quite apparent from this that the founding fathers of the United Nations fully expected the Grand Alliance of the Second World War to continue; the possibility that it might break up apparently never crossed their minds – at least, it was never taken into account.

One might well wonder whether the delegates were meeting at San Francisco or somewhere out on Cloud Seven. However, before exercising the harsh judgment of hindsight, the atmosphere of the times must be considered. The conference was meeting while the fighting was still going on, and the emotional pressures to prevent this happening again, "to save succeeding generations from the scourge of war" overcame all arguments. Then, the delegates were only too conscious of the wretched failures of the League of Nations to prevent aggression in Manchuria and Ethiopia, and its supine inability to keep the peace. They seemed to feel that they could right these errors by simple changes in the rules. There was no provision for the compulsory enforcement of the League's decisions in its Covenant; the use of force required the unanimous approval of all members, including the member against which the use of force was directed – on the face of it, an absurd proposition. It may be that at the time the Covenant was drawn up, the "enforcement of peace" was considered a somewhat contradictory dogma. But it did not strike the delegates at San Francisco as such. They believed that by concentrating the power of the international organization in the hands of the five permanent members of the Security Council, the five major allies of the war, they would assure the United Nations of the ability of quick and decisive action.

Still, it is surprising that the delegates should have been so obtuse about this matter and should have taken no steps to meet any change in the international situation. Perhaps, the answer is that there was none to take, that the only hope of a United Nations force lay in the continuation and consolidation of the Grand Alliance. What is more incredible is that the pretense that the Security Council could work should have been maintained long after its actions were paralysed by the Cold War. It was as if the Charter had become Holy Writ.

An immediate attempt to set up a United Nations force was made, but there was no agreement be-

tween the Great Powers in the Security Council. Without that, the Military Staff Committee, which was packed with generals then, also failed to draw up the special agreements between the Security Council and other members envisaged under Article 43 of the Charter – the agreements which would have brought Canadian units into a United Nations force. The committee met during 1946 and 1947 and finally gave up after it was evident that the Five Permanent Members upon whom the maintenance of peace and security depended, instead of being true friends and trusted allies, had turned into suspicious and angry enemies. The ghosts of the committee in the shape of the colonels who arrived under my office window still meet.

The failure to establish a United Nations force was a bitter blow to many who sincerely believed in the world organization and were dedicated to the cause of maintaining international peace and collective security. Yet, it may have been a blessing in disguise. Even if the Grand Alliance had continued, the formation of an international army would still have been fraught with difficulties. A question which has never been answered yet is: who would command such a force? And, when it was not in use, where would it be stationed? It is more than likely that such a force could only be set up with the elimination of national barriers and the formation of a world government. And, then it would not be needed. In fact, if there were agreement between the Great Powers, if the Grand Alliance were to continue, there woud be no need for a United Nations Force, as there would be no serious trouble. And, it is obvious that without agreement, there can be no such force either. The "enforcement of peace" may be the great illusion of the recent postwar period.

In any case, the main role of the United Nations is that of a meeting ground, a place for negotiation and conciliation, and this would be seriously compromised by the acquirement of a heavily armed striking force, wielding, presumably, nuclear weapons. Then, there is a fine moral issue involved: can the United Nations, which is essentially a peace organization, engage in war without destroying itself – even if that war were to assure peace and collective security? And if it did, if a U.N. force were to take action against some offending state, what would happen? Would it conquer that country? Or would it be content simply to turn back the aggression, if aggression were involved, and defeat the attacking army? It would seem that unconditional surrender is about the only objective the United Nations could have if it went to war, otherwise it would lose its universal and conciliatory position and become one side in a conflict, albeit the victorious side. This is precisely what happened in the Korean War which did not end in conquest or unconditional surrender but in a negotiated armistice: a U.N. offer to supervise elections in that divided country as part of a peace settlement was haughtily rejected by the Communists who pointed out that the international organization was a party to the dispute, and that it was under its banner that the South Koreans and their Allies fought. Thus, the United Nations lost its ability to mediate.

By the way, a United Nations Command does exist, but none of the problems mentioned above apply to it. There is no question as to who commands this body for it is a United States military command. The U.N. Command in Korea or UNCIK for short, is its name, and Canada recognizes it to the extent that there is a Canadian major as a liaison officer at its headquarters in Seoul. UNCIK does not report to the Secretary General and has nothing to do with the world organization whatsoever. It is a vestigial remain of the United Nations force which conducted the police action in Korea and is fully entitled to its name since the Security Council resolution appointing the United States as the agent of the United Nations for that action has never been rescinded and there is no peace settlement. UNCIK has a representative on the Military Armistice Commission in Korea which meets on occasion.

It was largely by accident that the United Nations was able to intervene in Korea and "enforce the peace" there. The Soviet Union was absent from the Security Council table. This was in the days of Stalin when Russian diplomacy was harsh and much less subtle than it is now: the Soviet delegates had walked out of the various bodies of the United Nations and were conducting a boycott of the organization in an attempt to force the admission of Communist China. So, the Russian seat was empty on that hot Sunday at the end of June 1950 when the Security Council met in its temporary quarters in the bomb-sight factory at Lake Success, N.Y., and remained empty throughout the period when all the fateful resolutions were adopted which virtually turned the authority of the United Nations over to the United States. The first resolution called for a "cease fire" and a withdrawal of the North Korean forces behind the thirty-eighth parallel. This had no effect, and two days later and a few hours after President Truman had ordered the American forces to go to the aid of the South Koreans, the Security Council called on all U.N. members to furnish "such assistance to the Repubic of Korea as may be necessary to repel the armed attack and to restore inter-

national peace and security in the area." It was on July 7, 1950, that the operative resolution was adopted which authorized the United States as the agent of the United Nations to set up a U.N. Command for the purpose of conducting operations against the North Koreans.

Ever since, there has been a fine old argument as to whether the Security Council's actions were legal. Nobel Peace Prize Winner Lester B. Pearson, who was Canadian external affairs minister at the time, and other Western spokesmen say that they were, that the Security Council could act without one of its permanent members being present. The relevant rules are contained in Article 27 of the Charter which says that "decisions of the Security Council on all other matters (except procedural matters) shall be made by an affirmative vote of seven members including the concurring votes of the permanent members", and international lawyers have interpreted the "permanent members" as meaning all five permanent members. In fact, there are some who assert that all the actions of the Security Council since 1950 have been illegal because the representatives of the Peking régime were not present and the only legal government of China is the Chinese Communist Government. The Security Council's actions may have been within the letter of the law, but they were hardly in the spirit of the Charter, and everyone acknowledges that. The group of Western Allies who fought in Korea were not the sort of United Nations force which the founding fathers envisaged at San Francisco.

If Maclean's Magazine considers this sort of action to be "United Nations police duty", then the military establishment required in Canada would not be so much smaller than the present one. In fact, at the time of the Security Council's extraordinary meetings at Lake Success, it was too small, and a special recruiting drive had to be put on, and the highways and byways searched, in order to provide a brigade for the United Nations forces. Since then, and as a result of the Korean war, the three services have been considerably expanded, and their enrolment almost tripled. The main Canadian formation in Korea was the 25th Canadian Infantry Brigade Group of about 6,000 men which was part of the Commonwealth Division. The R.C.A.F. had a transport squadron in the area, and Canadian fighter pilots could volunteer to fight with the United States Air Force over the Yalu, and many did. The navy had a couple of destroyers with the American fleet. Altogether, 27,000 Canadians served in Korea at one time or another; there were 1,600 casualties of which more than 300 were killed.

On a per capita basis, Canada's contribution was the third largest, next to that of the United States and of South Korea, yet there was constant criticism and complaint that this country did not pull its weight and left the main burden of the war to the United States.

Even now, in the calmer atmosphere of almost a decade later, it is evident that the Security Council had to take the actions it did in the summer of 1950: if it had not, the United Nations would have suffered a grievous blow from which it might not have recovered, and the United States would probably have withdrawn from membership. A recent American appraisal of the Korean War called it "a major victory for the moral concept of the United Nations and for the cause of world peace." It is also true that, as a result of the Security Council's actions, the authority and goodwill of the United Nations have been badly shaken. The conflict looked too much like a colonial conflict with white men fighting yellow men for the comfort and understanding of most Asians and Africans. Then, there was an unexpected and undesired by-product: the prestige which Communist China gained in defeating the United Nations forces at the Yalu, and the emergence of that country as the leading power of Asia.

There is not much point in attempting to strike a balance for the Korean War as such a United Nations action will never happen again. The Russians are back in the Security Council. They are not boycotting anything in the days of Krushchev and diplomatic flexibility. But even if they were to be absent, and a similar situation were to arise again, the United States would refuse to agree to such action. The Americans had a belly-full during the Korean War, and they have taken the pledge now. Their military men chafed at the whole set-up and blamed everything that went wrong on the United Nations. The Pentagon objected even to paying lip service to the world organization. The only communication between the United Nations Command and the United Nations at the height of the Korean War was a sporadic report on operations which was usually three weeks out of date. It was not just that the American generals were contemptuous of foreigners or suspicious of the Communists in the United Nations, they were opposed to the very idea of an international force, even one devised by their own government. This was borne out in the answer which the United States gave to the Collective Measures Committee.

During the momentous Fifth General Assembly which met at the end of 1950 and the beginning of 1951, a resolution was adopted called the Uniting

for Peace Resolution. It was an American attempt to get around the Soviet veto in the Security Council and make the United Nations work as a collective security organization, an organization for enforcing the peace. It showed a strange American belief in formulas and constitutional amendments for bringing about the millenium. As the Indian delegate, Krmishna Menon, was to say: if there is agreement among the Great Powers, there is no need to change the Charter; if there is no agreement, there is no use in changing the Charter.

The Uniting for Peace Resolution made it possible to call the General Assembly into special emergency session within twenty-four hours in the event that the Security Council was paralysed by the veto from taking action in the case of a breach of the peace or aggression. It was aimed at the Soviets, but, ironically enough, was used in the first instance against its co-sponsors, the British and the French. The Acheson Plan as the resolution was called, since its moving spirit was Dean Acheson who was then U.S. Secretary of State, also called for the establishment of a committee to be known as the Collective Measures Committee whose function was to set up a United Nations force. In fact, the over-all, omnibus Uniting for Peace Resolution recommended that each member state "maintain within its national armed forces elements so trained, organized and equipped that they could promptly be made available, in accordance with its constitutional processes, for service as United Nations unit or units".

However, when the Collective Measures Committee asked the Secretary General to circularize member states on this question of "ear-marking" forces, the results, to say the least, were disappointing. More than half the governments either did not bother to reply or said that they could not participate in the project; fifteen others merely acknowledged receipt of the communication. About a dozen said that they were in favour of the principles of the Uniting for Peace Resolution which they had already indicated by voting for it, but even these wriggled out of any commitment to set aside units for the use of the United Nations. Yet, there had been the usual overwhelming vote in favour of the resolution – 53 in favour to 5 against, with 2 abstentions – which only showed that so many countries were prepared to support a resolution in the General Assembly without any intention of carrying out its recommendations. Perhaps, the most astonishing reply came from the United States which was the mover of the resolution and the author of its main proposals. The Washington note drew attention to the U.S. forces which were then fighting in Korea but said, in so many words, that it could not earmark these troops or any other troops for use by the United Nations anywhere as Congress would not allow it. Evidently, the American generals had won over the diplomats – as they usually do.

Canada's reply was that the brigade group serving in Korea would be available for whatever military action the United Nations might have to undertake but while Canadians tend to cry out that they were the only ones to hold high the banner of a U.N. Force, the fact of the matter is that the Ottawa note was carefully worded and contained a number of qualifications and exits.

On November 4, 1959, with the General Assembly's adoption of its third report, the Collective Measures Committee ended its work. Its efforts were largely "sterile", Mr. Pearson said, and added this epitaph: "Another series of studies had been accumulated and now were laid away in files and vaults. The United Nations, nine years after its founding, still had no force at its disposal to implement its decisions – even 'to secure and supervise' a cease-fire and armistice." The Collective Measures Committee was given a decent burial and does not come back to haunt us as the Military Staff Committee does.

For a couple of years, the issue of a United Nations force was largely quiescent, and if it was raised, it was raised in a half-hearted manner. Even a suggestion that the number of observers with the U.N. Truce Supervision Organization in Palestine should be increased from 50 to 600 found no support anywhere.

Then, came the Suez invasion, and the world seemed to be turned upside down. At the end of October 1956, the British and French vetoed a call for a "cease fire" in the Security Council, and the Uniting for Peace Resolution was dug out of the archives, dusted off, and implemented. This was the device with which the Americans had hoped to drag the Soviets before the court of the General Assembly, and here it was being used against two Western powers. The Russians must have laughed themselves sick listening to the British and French use the same old arguments against this resolution which they had used, that it was illegal, that it was out-of-order, and so on. There was dismay in Ottawa, and about the only thing which saved Western sanity at this time was the Hungarian Revolt and the brutal manner in which it was suppressed by the Soviets.

Something had to be done to get the British and French out of the mess into which they had plunged with such self-destructive zeal, and in the early hours of a November morning while the special

Assembly was meeting, Mr. Pearson proposed the formation of the United Nations Emergency Force. There was nothing new about this idea, and a similar suggestion which was made about a year before was rejected out of hand by the Israelis and the Arabs. It was the timing which was right; the proposal now fitted the circumstances. The Secretary General was authorized to organize such a force in 48 hours and he actually did so in less time than that which just shows that improvisation can work in the United Nations when there is the will to action. A year later, Mr. Pearson was to say that UNEF "has so far proved effective for the purpose it was meant to achieve, the securing and supervising of a cease-fire". It was also a means of getting the British and French off the hook, or as Mr. Pearson put it "an indispensable pre-requisite to the acceptance of a cease-fire and the subsequent withdrawal of Anglo-French and Israeli forces from Egyptian territory".

Several of the so-called uncommitted nations agreed to provide units for the emergency force, among them: Sweden, Finland, Yugoslavia, India, Indonesia, Colombia, Brazil, and Canada. A Canadian, Major General E. L. M. Burns, who had distinguished himself as a soldier-diplomat at the head of the U.N. Truce Supervision Organization, was appointed commander of UNEF. The Queen's Own Rifles were to have gone to the Middle East, but the Egyptians objected, largely because their name was the same as that of a British regiment, and thus the Canadian contingent is made up of a reconnaissance squadron from the Royal Canadian Dragoons and a number of service units. A small R.C.A.F. transport outfit is also in the area. Altogether, about 1,000 Canadians are in UNEF whose total strength is less than 6,000, and it is freely admitted that Canada has too large a role for the good of the United Nations force.

It is reasonable to assume that Maclean's Magazine has UNEF in mind when it speaks of "United Nations police duty", and there is no doubt that the present emergency force would be the prototype of a permanent international force, should one be established.

Mr. Pearson is the greatest proponent of such a body which he would call a Peace Supervision Force. He has suggested a stand-by force available for any emergency and, if not that, a stand-by arrangement where there would be a permanent headquarters group or nucleus which would be rseponsible for activating the force on short notice. He has proposed that the Secretary General should have a permanent Military Adviser, who would presumably be the head of any international force. Like UNEF, the Peace Supervision Force would not be a fighting force but a police corps or an observation corps. "We were trying to implement, if not a new concept of United Nations Supervisory Action, certainly an enlarged one," Mr. Pearson said, in speaking of UNEF. Quite obviously, a force of less than 6,000 men could not carry out any major military or punitive role; it could only enter a country with the consent and good-will of the government of that country, as UNEF has done in Egypt. While it would be a non-combatant force, Mr. Pearson asserts that it "must be capable of defending itself when it is in the field" which would seem to emphasize its military character. Yet, UNEF's task has been supervisory. The reason for its success is due to its presence on the border between the Arabs and the Israelis, and "to show the United Nations presence" does not always require a military formation.

One of the most successful United Nations actions in the realm of peace supervision was carried out by UNOGIL, the United Nations Observer Group in Lebanon, a body similar to the United Nations Truce Supervision Organization in Palestine. Only, instead of UNTSO's fifty or so observers, UNOGIL had more than ten times as many, including a Canadian group consisting of 71 officers and six other ranks. The latter were real observers while the former were really investigators who reached the scene after an incident had occurred. There was no doubt about the "United Nation's presence" in Lebanon and UNOGIL completed its work in a few months and most of its observer officers were home by Christmas — last Christmas.

The most difficult aspect of a permanent international police force, call it a Peace Supervision Force or what you will, is its make-up. The Communists may pass a temporary group like UNEF but they would demand their share of troops in a regular body and if they did not get them they would charge that it was a "tool of the imperialist powers" and set out to smash it. The Secretary General is well aware of this, and Dag Hammarskjold knows what a diplomatic bear trap this is and that, in the end, it was the Korean action which led to his predecessor, Trygve Lie's undoing. The Minister of External Affairs, Howard Green, said that when Mr. Hammarskjold was asked recently whether he visualized a permanent United Nations force along the lines of UNEF, he replied in the negative and used the analogy of a tailor and his cloth to explain his position. A good tailor "cuts the suit to the body", he said. Thus, while a UNEF might fit a particular situation, and a UNOGIL another, a different type of organization might be needed for a third. The fact that Mr. Green

seemed to quote what Mr. Hammarskjold said with approval may indicate that the Canadian government is not overly enthusiastic about a permanent United Nations force.

At any rate, it is clearly not the sort of thing on which a country's military policy could be based, as Maclean's Magazine suggests. The simple fact of the matter is that there is no permanent United Nations police force, nor is there likely to be any. Even if there were one, it would be no larger than UNEF and might be a good deal smaller, and that would not provide sufficient scope for even the "modest, modestly armed mobile units" envisaged. There may be a case for neutralism, but it is not being advanced by such wishful editorials about contributing to an international force that does not exist. A demilitarized belt around the Arctic Circle might form the basis of a new policy, but it should be pointed out that neutralism in itself does not mean any substantial reduction in the military establishment. Many neutralist countries have larger armed forces than those joined together in alliances.

The scrapping of the Avro Arrow has come as a shock, and a military re-appraisal is badly needed, but reliance on a United Nations force is not the answer.

NEW SUBSCRIBERS

Limited supplies of 1957 and 1958 Journals are available at a price of fifty cents per copy. Interested subscribers should contact the Business Editor, R.C.A.F. Staff College Journal, Armour Heights, Toronto 12, Ontario.

THE TYNE:
4,985 - 5,545 and 5,730 e.h.p.

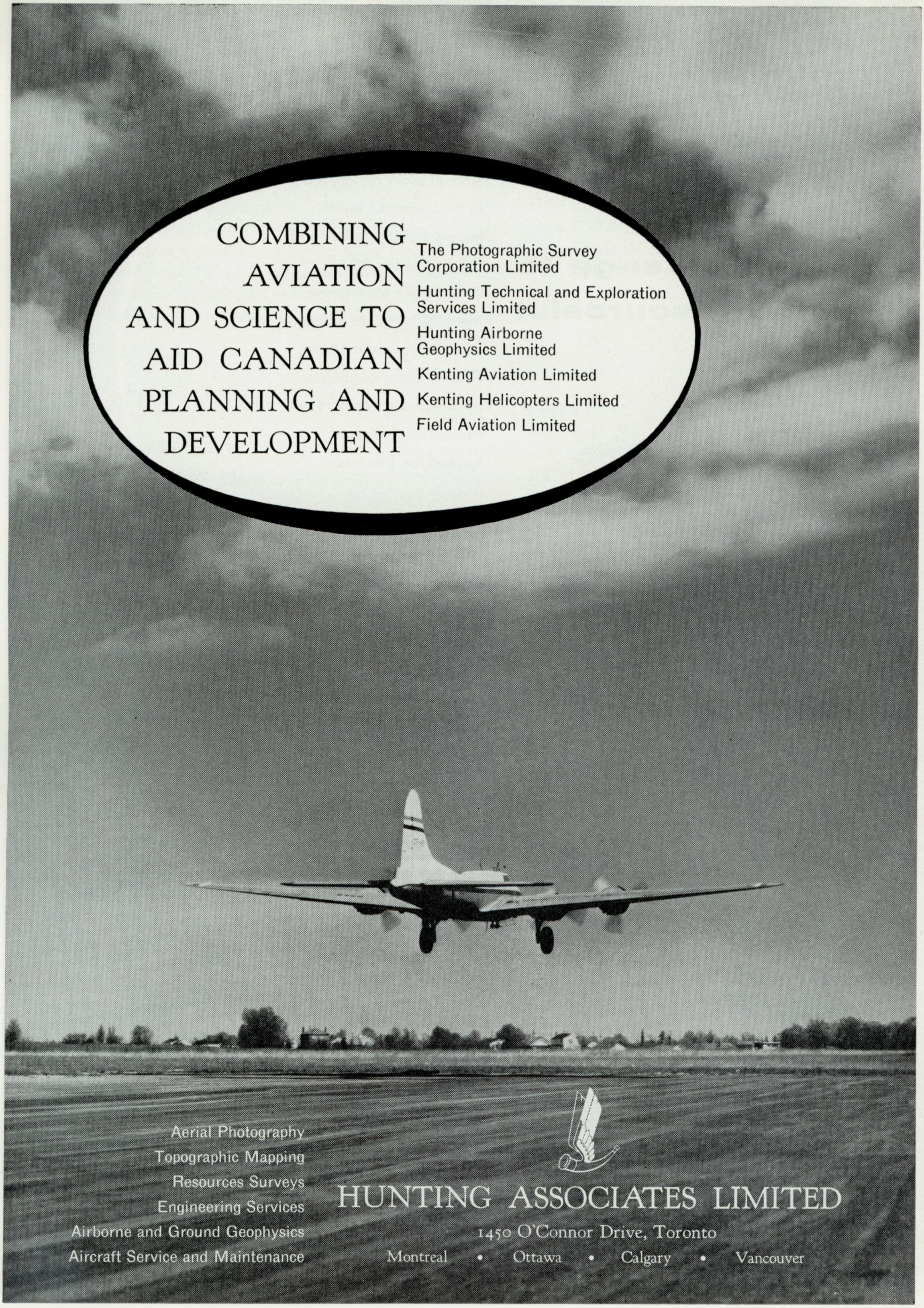
On order by the Royal Canadian Air Force,
Canadair CL-44's are to be powered by the Rolls-Royce 5,730 t.e.h.p. Tyne — an advanced twin-spool high compression prop-jet, designed for very low fuel consumption and due to enter service in 1960 at ratings of 4,985, 5,545 and 5,730 e.h.p. It has also been specified for the Vickers Vanguard, ordered by TCA and British European Airways, the Fairey Rotodyne and the Short Britannic 3's on order for the Royal Air Force.

ROLLS-ROYCE OF CANADA LTD.

P.O. Box 1400, St. Laurent, Montreal 9, Quebec

AERO ENGINES · MOTOR CARS · DIESEL AND GASOLINE ENGINES · ROCKET MOTORS · NUCLEAR PROPULSION


challenge to
the resourceful
Almost every remote area
of the Canadian north
is aware of the planes and
the men of the RCAF.
Trained and experienced to
meet the constant demands
of its harsh environment,
aircrew and groundcrew
help maintain this continent's
round-the-clock alert
beyond the tree line.
AVRO AIRCRAFT LIMITED
MALTON • CANADA
MEMBER: A. V. ROE CANADA LIMITED & THE HAWKER SIDDELEY GROUP
CF-100'S ARE ON GUARD IN CANADA—AND IN EUROPE WITH NATO AND THE BELGIAN AIR FORCE


COMBINING AVIATION AND SCIENCE TO AID CANADIAN PLANNING AND DEVELOPMENT
The Photographic Survey Corporation Limited
Hunting Technical and Exploration Services Limited
Hunting Airborne Geophysics Limited
Kenting Aviation Limited
Kenting Helicopters Limited
Field Aviation Limited
Aerial Photography
Topographic Mapping
Resources Surveys
Engineering Services
Airborne and Ground Geophysics
Aircraft Service and Maintenance
HUNTING ASSOCIATES LIMITED
1450 O'Connor Drive, Toronto
Montreal • Ottawa • Calgary • Vancouver

Some Thoughts on the Relationship of National Policies and Armed Force

JOHN GELLNER

Wing Commander John Gellner, D.F.C., C.D., LL.D., practised law in Brno, Czechoslovakia, until the German occupation of that country. During the war he flew with Bomber Command. He has been in the R.C.A.F. since early 1940, and was on the faculty of the R.C.A.F. Staff College — now retired from the R.C.A.F.

International Politics are Based Solely on Power

POLITICAL leaders in the democratic countries of the West may be reluctant to admit it, and the public loath to accept it, the fact remains that international politics are in our days based as much on power, and as little on morality, as ever before. The often heard argument that this will remain so as long as responsible statesmen will not renounce power as the measure and ultimate reason in the relations between nations, must on closer examination strike one as childish: the rule of law in international affairs is obviously not something that will come to us as a gift provided we wish it strongly enough. Indeed, whenever in the past ethics played a role in international politics, it was always after one country had wielded its power with so much success that it did no longer have to fear power. The "Pax Romana" and, some 1,800 years or so later, the "Pax Britannica", followed such well nigh complete triumphs of power politics. Nothing like that is in sight today.

Let us then accept as an evil, but one which is ineluctable in the present condition of the world, that " . . . no State incapable of waging effective war can reasonably expect other States to meet its demands, heed its wishes, or even acknowledge its right to survival", and that "diplomacy is . . . potential war, just as war is a business of seeking political objectives by military coercion rather than by bargaining".[1] From this point of view, peace is "a state of affairs that lasts as long as the forces and interests that have been strong enough to establish it remain sufficiently powerful to maintain it".[2] Peace is thus again only a result of force, or at best a premium to be gained for the capability to apply force. The same goes for all variants of the term, peace. Neutrality, for example, is the right of a country to remain unmolested in a conflict of others, provided it is willing and able to repel any attempts at molestation. And the very much talked about nowadays state of "peaceful co-existence" has thus been defined by a former U.S. Secretary of the Air Force, Harold E. Talbott: "You exist if you are too tough to tackle. You perish if you are weak and unready". It is the peaceful co-existence between lion and leopard, not between lion and lamb.

With peace and war, and all the other conditions of international relations that lie between these two extremes, entirely dependent on the relative power of States and groupings of States, military strength — one's own, that of one's friends, and that of one's foes — is the decisive factor in the foreign policy of any country. To play it down is often only part of the finesse of diplomacy. The more it is deprecated, the more menacingly it looms in the background. Nor can the "balance of terror" which supposedly exists between the big Powers possibly result in a diminution of the importance of armed force in the world of today. For even if there were such a balance (which is very doubtful), it would again be dependent on the States which are on the two arms of the scale developing their armaments in step with one another. It would again be a military much more than a political equilibrium.

The Unity of Diplomacy and Force

Throughout this century, the approach of Western statesmen to the problem of power has been mincing and shamefaced. This has had a debilitating effect on the policies of the West. The tendency was to think of diplomacy and force as two distinct means of conducting foreign policy. The first was the respectable way, to be trodden with lofty disdain for military considerations. Only after diplomacy had failed, attention was paid to the shocking business of applying force. Unfortunately, once this was done, diplomacy was deferred for the better times after the conclusion of hostilities. The result was

diplomacy conducted in a military vacuum, followed by war conducted in a diplomatic vacuum. In other words, foreign policy moved on two different planes which were not properly connected with one another.

The late 'Thirties and the Second World War provide striking examples of this basic weakness in the international politics of the Western democracies. For instance, there is no evidence that Mr. Chamberlain seriously consulted a single one of his military advisers before he made his fateful visits to Hitler which culminated in the Munich Agreement. He acted solely on the basis of a political appreciation of the situation. A military appreciation would have shown him that in the Fall of 1938 Hitler could have been checked more easily than at any time after that. In fact, we know now that the German generals considered the military position of Germany so hopeless that they were making preparations to arrest the Fuehrer in case he attacked Czechoslovakia in the face of concerted opposition from the Western powers.

On the other hand, once the war was on, it was conducted by the Western Allies in the main on the basis of military requirements, and nothing else. The American leadership, in particular, had its eyes glued firmly on military victory to the exclusion of all other considerations; it was quite prepared to let political problems take care of themselves until they could be tackled in earnest after the war. This attitude was clearly shown during the controversy over where to invade the Continent of Europe — the Channel coast was chosen, which was militarily, but not politically, the best spot. An incident typical of many others is quoted in the official U.K. history of the war.[3] On April 30th, 1945, Mr. Churchill drew attention to the importance in terms of the long-range aims of the Allies of an occupation of Prague by General Patton's army which was, then, within striking distance of the city. General Marshall, in advising against such a move, wrote: "Personally, . . . I should be loath to hazard American lives for purely political purposes". Even a man of Marshall's format did not understand that the only purposes worth sacrificing lives for in war are the political, the justification for waging war being the necessity to achieve the aims of national policy.

The Soviets, on the other hand, looked from the beginning on political objectives and military requirements as on a single entity. They showed this in their general conduct of the war with Germany. Thus, their shortest way to victory lay in an advance through the Polish plains to the heart of Germany. Yet they divided their effort by driving into the Balkans from which the Germans would have had to retreat anyway, eventually, once they had been outflanked by a Russian drive on Berlin. The reason for this costly, in men and materiel, dispersal of effort was Soviet fear that, unless the Red Army did the "liberating", non-communist regimes would become entrenched in Eastern Europe. A particularly crass example of the outlook on war of the Russians was their reaction to the tactical possibilities which the Warsaw Uprising of 1944 had opened up for them. That revolt of General Bor-Komorowski's Polish Home Army took the Germans, already hard pressed from the East, in the rear. Under these conditions, a determined Soviet attack on Warsaw would almost certainly have broken the German front, and at the same time brought relief to the embattled Polish Resistance. The Russians, however, chose to remain standing with ordered arms on the banks of the Vistula for some two months, during which the Germans slaughtered the anti-communist segment of the Polish forces. This probably prolonged the war for weeks or months, and cost the Russians a few ten thousands or even hundred thousands of additional casualties, but this to them counted for nothing compared with the long-term political and strategic benefits which the liquidation of the Home Army brought to them. We, on the other hand, armed resistance groups without regard for their political persuasions, so much so that after the war communist units in many instances used against us the weapons with which we had supplied them. And we pressed underground movements which we were supporting to co-operate with the communist organizations in their countries, in complete disregard for political consequences which could have been foreseen if we only had cared to look. Politics were simply set aside while the fighting was on, just as military considerations had been set aside before the war.

The principle of the unity of diplomacy and armed force is now beginning to be accepted in the West as well, reluctantly perhaps and certainly not openly, but at least in practice. Walter Millis[4] calls it "civil-military integration"; signs that it is developing can be seen in all Western countries, in the United States and in France perhaps more strongly than elsewhere. Such integration requires that politicians have a good understanding of military problems, and military leaders of political problems. The desirability of the first of these two requirements has always been acknowledged — some Western statesmen who were at the helm in the two world wars fancied themselves quite the strategists — but not the second. Yet political awareness is a must for

a professional soldier in our times. This has, of course, been so for many years, ever since military men ceased to be "jolly fellows who fought the enemy chosen for them by the War Office". In his "The Central Blue", Sir John Slessor cites instances of what happens when staff officers tackle a problem purely on the basis of its military aspects. General MacArthur's march to the Yalu was a case of military perspicacity combined with political blindness. On the other hand, the campaign in Indochina as waged by the Viet Minh was a masterpiece of co-ordination of the military with the political.

National Objectives Must Be Tailored to the Means of Enforcement

No state can call itself "secure" which cannot attain its reasonable national objectives. It follows that the objectives of policy must be drawn up in consonance with the military means which are available or can be made available, the latter being the ultimate limiting factor in foreign policy. In other words, there is no point setting out political aims which, in the last resort, cannot be enforced. Conversely, it would be sheer waste to build into the military establishment any parts which are not capable of putting muscle into specific national policies.

The French military establishment in the 'Thirties was a sad example of an armed force which, powerful though it was, did not fit the over-ruling political objective of the country. This was to keep Germany in check through pressure from the West and the East, the latter applied by two heavily armed allies of France, Poland and Czechoslovakia. As it was more likely that the Germans, if they ever decided to tread the path of aggression again, would strike eastward rather than westward, France had to have the capability to take the load off her allies as quickly as possible after they had been attacked. For this France needed highly mobile forces with strong air support, and a strategic bomber force, in other words, the greatest possible offensive strength. Instead, the French decided on the construction of the Maginot Line. This was a fateful decision, both militarily and politically. It put the emphasis on the training of fortress troops; on reconnaissance aircraft and interceptor-fighters rather than bombers; and on the use of the very considerable French tank forces not as a battering ram but as armoured artillery. The inevitable result of such military policy was the disintegration of France's eastern alliances, as the *raison d'être* of the latter disappeared with the realization by the Czechs and the Poles that the French would not support them in case of a German attack, but would sit tight behind their supposedly impregnable wall. As it was, Poland backed out of its commitment to France in 1934. Czechoslovakia adhered to it to the bitter end, which came inexorably four years later.

An instance of a stated national policy which was dead-born because of the absence of armed force capable of enforcing it, is the policy of "liberation" of the Soviet satellites forecast during the election campaign in the United States in 1952, and enunciated in the Spring of 1953. It had been part of the political platform of the Republican Party which, at that time, was very critical of the policy of "containment" of President Truman and the Democrats. After Mr. Eisenhower had won at the polls and Mr. Dulles assumed the direction of American foreign policy, "liberation" officially supplanted "containment" as the ultimate aim of United States policy in Eastern Europe. There was not then, and there never has been since, a chance of attaining that aim, not even when the opportunities were particularly favourable as indeed they were in June, 1953, during the uprising in East Germany. The Soviet Union was, then, in the throes of a deep internal crisis brought on by Stalin's death – Lavrentij Beria was arrested and his secret police empire was being smashed just at the time when the Germans revolted. If conventional armed forces had been available, strong enough to make the Kremlin leaders hesitate to oppose them while things were topsy turvy in Russia, East Berlin could have been occupied and East Germany most probably liberated, there and then. The necessity to protect Allied rights under the Potsdam Agreement would have served as justification for intervening in the revolt. Conditions as far as the Western powers were concerned were much less favourable during the Hungarian Revolution of 1956. In any event, not even the semblance of the armed force that would have been required to enforce a policy of "liberation" was available at that time. "Liberation", being unenforceable, thus never was a legitimate national objective of the United States. At best, it was a fine gesture and a pious hope.

Among the reasonable national objectives for the enforcement of which power must be made available, the preservation of peace is undoubtedly today the most important. This does, however, not mean peace at any price. The statements repeatedly made by responsible Western leaders, from President Eisenhower down, to the effect that "we will never start a war", are so fallacious that, fortunately for us, the Soviets do not believe that we really mean what we are saying. If they did, they would run over us even more roughshod than they already do.

Churchill deplores[5] that "good, decent, civilised people" seem to think that they "must never themselves strike till after they have been struck dead". With his customary clarity he also sets out the conditions under which a peace-loving nation would not only be entitled to start a war, but indeed should do so[6]: "The safety of the State, the lives and freedom of their fellow countrymen to whom (the nation's statesmen) owe their position, make it right and imperative in the last resort . . . . that the use of force should not be excluded. If the circumstances are such as to warrant it, force may be used. And if this be so, it should be used under the conditions which are most favourable. There is no merit in putting off a war for a year if, when it comes, it is a far worse war or one much harder to win".

The principle that it is right to wage war if the security of the nation requires it (and, as we said, security depends on the attainment of reasonable national objectives) has not been invalidated by the advent of nuclear weapons. What the latter have done is to force the Powers to return to the proper concept of the purpose and the conduct of wars which, well understood in past centuries, was abandoned in the two world wars of our age. Bismarck laid it down that "war should be conducted in such a way as to make peace possible". This means that the aims of a war must always be limited, and that the conflict must never be carried beyond the point where the specific national objective which brought on the war is attained. Annihilation of the enemy, military or political, was almost never the goal in warfare between civilized nations prior to this century. Bismarck himself gave an excellent example of restraint in war to achieve the best peace in the contest with Austria, in 1866. In that case, the objective was to insure Prussian hegemony in Germany — and thereby to make possible the unification of Germany under Prussian leadership — by forcing Austria out of the German Federation. The victory of Sadowa achieved this. Although the Prussian troops were within 60 miles of Vienna and could have occupied the capital city with ease, the temptation to humiliate a beaten foe was resisted. There were no annexations. As a result, the Austro-Hungarian Empire remained neutral in the Franco-German War of 1870-71, and became Germany's ally in 1879. One has but to compare the conditions after the Peace of Prague (which settled the War of 1866) with those after the Peace of Versailles, and with what is happening today after a war was fought to the point of "unconditional surrender", to see that war will only be a proper instrument of politics if it is conducted with the minimum of force that is necessary to attain its aim. And this aim must be such that the losing side will not be tempted to fight to the bitter end, but only as long as fighting appears to be more advantageous than yielding. As we said, this is nothing new, nothing that only the nuclear bomb has forced upon potential belligerents. Wars were always conducted in this way. The two world wars of the XXth century were among the few that were fought on the basis of "all or nothing".

There is, in fact, no way of combining power politics with peace under all circumstances. But today, when neither side wants all-out war or even the creation of conditions which could lead to all-out war, limited objectives must invariably be attained by limited military means. There being only one reasonable national objective which can be achieved by the use of nuclear weapons (or rather the threat of nuclear weapons), the deterrence of nuclear war, conventional arms must remain even today the instruments of enforcement of objectives of foreign policy.

What Matters is Usable Force

We have tried to make the point that armed force as such is useless, in fact is nothing but a burden to a nation's economy, if it cannot be used to attain important political aims. Such force can be compared to a powerful engine in a car which has a regulator on the gas pedal. The horse-power rating of the engine is meaningless if the accelerator cannot be depressed far enough to make good use of the available power.

The absence of usable (as against available) force is today the greatest weakness of the West. Just at the time of writing of this article this weakness was shown all too clearly in the dispute over Berlin. It is undoubtedly a reasonable, indeed an ineluctable, objective of Western policy to keep West Berlin free. Leaving aside all reasons of prestige and common humanity — we certainly do not wish to throw close to two-and-a-half million people to the wolves — the adherence of West Germany to NATO depends on the defence of the freedom of Berlin. For in Germany an important segment of political opinion, and above all the powerful opposition Social Democratic Party, contend that the unification of all Germany in freedom would be possible on the basis of neutralization and, if need be, demilitarization. Those who believe in this are almost certainly wrong as things stand now, but they had a case some years ago, at any rate at one time in 1955[7]. It was Mr. Adenauer who persuaded the majority of the Germans that their ends could best be attained by dealing with the Russians from

strength. It is enough of an embarrassment that no progress has been made since 1955 toward German unification. The surrender of Berlin would utterly discredit Mr. Adenauer's policy. The Germans could then not be blamed if they wanted to be rid of an alliance which hampered rather than helped them in the fulfilment of their national aspirations.

So hold on to West Berlin we must, and this means first of all keeping open communications with that city. To do this against armed opposition from the East Germans, aided and abetted by the Russians, would require force. But what force? We undoubtedly could, without resorting to nuclear weapons, barrel through road blocks or subdue anti-aircraft defences disputing the passage to our transport aircraft, but, with the means at our disposal, we would probably not be able to do so for any length of time and against mounting resistance. To use tactical nuclear weapons would then be the next step. On whether or not we would take it, European opinion is divided: some fear that we would not, and consequently would have to give in after having done some fighting, which would be worse than giving in without a fight; others fear that the United States at least would use nuclear weapons and that this would lead to ends impossible to foresee, but as likely as not fatal to the world. Be it as it may, and whether the United States does or does not use nuclear weapons, the dilemma in which the West finds itself shows that we do not possess the armed force suited to the achievement of this particular objective of our foreign policy. For any threat to West Berlin would vanish at once if the Western powers could state unequivocally — and had the armed force to back such a statement — that any attempt at interference with their communications with Berlin would be brushed aside with overwhelming strength of conventional arms, and perhaps punished by the occupation of any area in East Germany from which such interference originated. We could then, without being under duress, sit down with the Russians at the conference table, on the foreign ministers' or at summit level, and settle the German question. Such armed forces, and only such armed forces, would be able to carry out their function in an era of power politics, which is ". . . by their very existence to secure agreement in circumstances in which, otherwise, parties to diplomatic negotiations might prefer to disagree".[8]

The Soviet Union is an outstanding example of a country with a foreign policy directed toward far-reaching objectives — the ultimate of these quite likely is still world domination — which has provided itself with armed forces tailored to the exigencies of such a foreign policy.[9] The Soviets are capable of deterring nuclear war and of waging conventional war of any type. They have not deprived their grand strategy of the advantages of initiative by accepting beforehand the unenviable position of the attacked who must fight in conditions chosen by, and thus best suited to, his adversary. Above all, they have apparently achieved in their governmental organization complete unity of politics and armed force. This, incidentally, is not the natural consequence of a tyrannical system of government — such unity has completely eluded other dictatorships in recent times.

The Public and Armed Force as An Adjunct of Politics

It is only natural that American political and military concepts prevail over all others in the Western world. This is mainly so because the United States is carrying the burdens of leadership, but also because the peculiarities of the American Constitution make it more difficult for the United States to adjust itself to foreign political thinking than it is for other countries to fall in step with American. Also, the extraordinary, when compared with that of other parliaments, influence which the U.S. Congress has on the framing and conduct of foreign policy results in plans and actions which more than anywhere else reflect the convictions and the attitudes of the citizenry.

It is thus a fact of considerable practical significance that the majority of Americans are still anti-militarist, in the sense that they distrust what they believe to be the "military mind", and that, while they admire strength in the individual, they dislike organized force. The tradition, common to all Anglo-Saxon countries, that the military should have as little influence as possible on, and no part in the actual framing of, national policy is firmly embedded. In our times, the inevitable modification of this rule is viewed with apprehension. Supreme Court Justice Douglas expressed the feelings of most Americans when a few years ago he called "the increasing influence of the military in our affairs the most ominous aspect of our modern history".

Under these circumstances it is particularly difficult to create a climate favourable to true civil-military integration in the formulation and conduct of foreign policy. The very idea that force should figure overtly, in the shopwindow as it were, in the apparatus of diplomacy is still abhorrent to most American political leaders because it is abhorrent to most Americans. The same holds true to a greater or lesser degree in all Western democracies (and in

Canada more so than in most), but nowhere is a change in the popular concept of the function of force in politics more urgent than in the country which, for better or for worse, must lead the Western coalition.

For our present military weakness – we may almost call it military impotence – has mainly psychological reasons. As long as we deprecate force as part and parcel of foreign policy, and that to the extent of saying that "if it comes to a war, we have failed",[10] we will not be able to muster the popular support necessary for the creation of meaningful armed strength. And without the latter, our foreign policy is going to continue to wave feebly a gold-headed cane when, in the conditions in which the world is today, it should wield a lead-weighted club.

[1] Frederick L. Schuman, "International Politics" (McGraw-Hill, 1958).

[2] G. Schwarzenberger, "Power Politics" (Praeger, 1951).

[3] John Ehrman, "U.K. History of the Second World War, Military Series. Grand Strategy, Vol. VI." (H.M. Stationery Office, 1956).

[4] "Arms and The State" (Twentieth Century Fund, 1958).

[5] "The Second World War", Vol. I: "The Gathering Storm" (Houghton Mifflin, 1948).

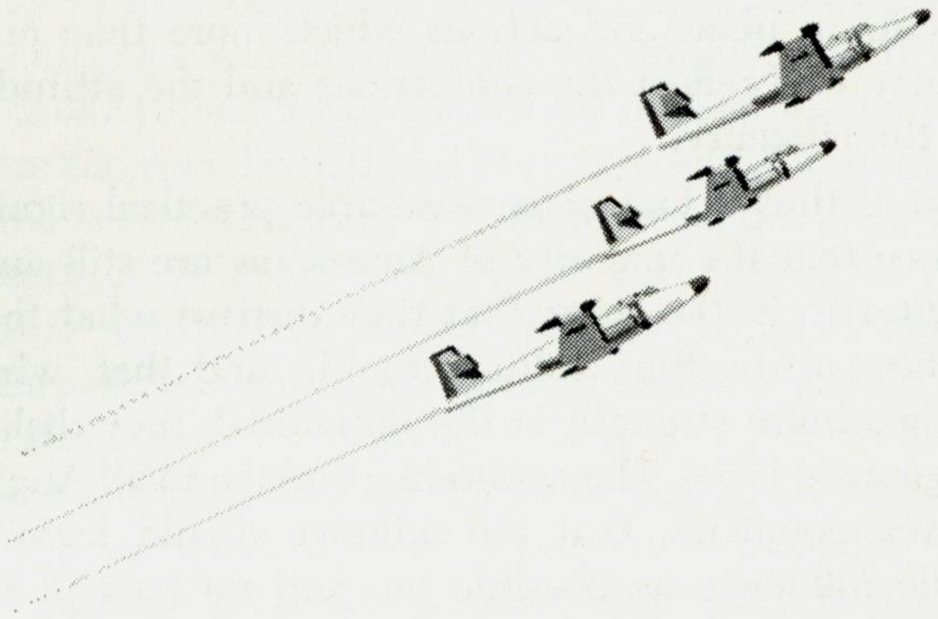
[6] Ibid.

[7] A resolution of the Interparliamentary Union of Eastern Europe sitting in Warsaw, in February 1955, demanded free and supervised all-German elections and the implementation of the Potsdam Agreement (that is, the de-militarization of Germany). The Russian delegation voted for the resolution which, if it had been carried out, would have resulted in the unification of Germany.

[8] G. Schwarzenberger, supra, note (2).

[9] For an excellent, recent account of Soviet military policy, read S. D. Dinerstein, "War and The Soviet Union" (Praeger, 1959).

[10] This is a saying of Prime Minister MacMillan.



Collins of Canada
supplies the RCAF with
the finest airborne
communication and
navigation electronics

COLLINS

COLLINS RADIO COMPANY OF CANADA, LTD.
Research, Development and Manufacturing facilities at
11 Bermondsey Road, Toronto

"YOU SAY C.A.R.L. IS UP THERE"

"Sure, C.A.R.L. built the R-Theta which helps these chaps get home"

CANADIAN APPLIED RESEARCH LIMITED

CANADIAN APPLIED RESEARCH LIMITED

Civil Defence Roundup

MAJOR-GENERAL M. H. S. PENHALE, C.B.E., C.D.

Major-General Matthew Howard Somers Penhale, Canadian Army (Retd), was educated at Bishop's College, Lennoxville, Quebec, and the Royal Military College. He was in both World Wars and in the latter part of the last war attained the position of Deputy Chief of General Staff, Canadian Military Headquarters overseas. He was General Officer Commanding Western Command in 1947, and retired from the Army in February, 1951. Since that time he served as Director of Metropolitan Civil Defence Board, Winnipeg, until 1954 when he was appointed Commandant Canadian Civil Defence College at Arnprior.

INTRODUCTION

ANNOUNCEMENTS in the House of Commons in March and April of this year forecast a number of important changes to be made in the organization and administration of Civil Defence in Canada. These followed a study of the report submitted by Lieutenant-General Howard Graham, C.B., C.B.E., D.S.O., formerly Chief of the General Staff, commissioned by the Government to make a nation-wide survey of the Civil Defence situation and to submit a report accompanied by his recommendations as to what should be done about this much discussed and unpopular service.

The Graham Report has not been made public, but it seems most likely that as a result of his survey across the nation the General was not convinced that Civil Defence in its present stage could provide that secure foundation of public opinion and determination so essential in support of military effort in time of war. As a military man, a brilliant and experienced soldier, this realization must have come as a distinct shock. Like others in his profession he would be the first to realize that without a "firm base", military operations would be of no avail.

High military authorities everywhere, including Canada, are agreed that in the event of nuclear war, the primary task of the Armed Services, certainly in the first stages, would be to ensure the survival of the civilian population, upon whose economic effort, determination and "will to win" they must depend. Therefore every available military resource not directly required for essential and immediate operations will be put to this purpose. To the "military mind" therefore, it perhaps became evident that drastic revision of Civil Defence planning and responsibilities had now become a matter of not only military but national necessity.

Like many others concerned with Civil Defence we are unaware of the substance of the Graham Report; if our reasoning is correct, it seems likely that the General favoured turning over the main business of Civil Defence to the Armed Services as being the only way in which public confidence and interest could be established and sustained. Whether or not he was right in his diagnosis, and prescription for a cure, must remain a matter of opinion in the minds of those privileged to have access to the Report. It must be observed, however, that the hiatus which seems now to be evident as between the announced changes and their implimentation, has set up a good deal of doubt and uncertainty in the public mind and more so among those who over the years have given much of their time and effort to Civil Defence. "The Army is taking over" is heard on all sides and in consequence: "There is no necessity for any further effort on the part of the individual citizen volunteer." It is perhaps regrettable that plans were not worked out in advance concerning the method of implementation of the proposed changes, even at the expense of a little more time before making the formal announcement.

RE-ORGANIZATION AT FEDERAL LEVEL

On 1st September 1959, the Army becomes directly responsible for the warning of civilians of enemy air attack; determining the location of nuclear explosions; assessing the damage; carrying out initial entry into areas damaged by nuclear weapons or affected by "fallout"; conduct of rescue operations; direction and control of civilian agencies such as fire and police services; emergency support of provincial and municipal authorities in maintenance of law and order and population control; maintenance and operation of emergency communications.

The Minister of National Health and Welfare will be responsible for assisting Provincial Governments with the organization and operation of medical,

nursing, hospital and public health services, and for emergency accommodation, feeding, supplies, guidance and welfare of the homeless. The Canadian Civil Defence College at Arnprior will also remain under control of this Department.

Under the Minister of Justice, the RCMP will assist Provincial and Local Governments with the maintenance of law and order and with traffic control in Civil Defence exercises and operations.

The Prime Minister, acting through the new Emergency Measures Organization, is to co-ordinate Civil Defence planning by all Federal Government Departments and agencies; he will prepare plans covering all matters not already the concern of other Federal Departments, including assistance to the provinces and municipalities when this is not already the duty of another department; this "agency" will also maintain liaison with other countries abroad, NATO, and Provincial Governments concerning Civil Defence.

It should be said, that when the foregoing was discussed with Provincial Ministers at the meeting, the latter laid great stress upon the need for public education in Civil Defence and for a continuance of the volunteer movement throughout the country.

COMMENT

It now becomes apparent therefore, that Civil Defence, as such, at the Federal level has become the concern of no less than four separate federal departments or agencies. True, the new Emergency Measures Organization is given the responsibility for "co-ordinating" all aspects of Civil Defence with all agencies concerned, but in order to fulfil this requirement they must be given the tools for the job. It is not yet apparent what establishment will be provided or in what degree this organization will be permitted to administer the requirement. Suffice it here to say now that the wisdom of setting up a divided control such as this in the executive aspect is not immediately apparent. Such an arrangement offends against principles of good organization in military affairs, commerce or industry. The word "co-ordinate" is susceptible to more than one interpretation as to the function involved. "Command", "Control" or "Direction" would be terms better by definition to fit the requirement. As it is, where more than one Federal Department is involved only the Prime Minister can decide; unless it is his intention to act also as Minister of Civil Defence, we can see many occasions for confusion, overlapping and delay occurring from differences in outlook or interpretation on the part of the other departments concerned. This could be overcome only by conferring full powers of decision and control upon the responsible head of the Emergency Measures Organization who, in this event, should perhaps be styled Director General or Commissioner of both EMO and Civil Defence alike, and elevated to the status of a Deputy Minister.

THERMO-NUCLEAR WARFARE IMPLICATIONS

It is necessary to consider any questions relating to non-military preparedness against a background of realism. This can only be achieved by acceptance of the available information resulting from scientific studies and tests which have been carried out over the past few years. There has been a tendency to hold back much of this information for fear of needlessly alarming the general public. It is difficult to be correct in assessing this factor but surely it is better to tell the people everything than to withhold information they must have to ensure survival.

Whether delivered by means of manned bomber or intercontinental ballistic missile, it is fair to say that very little would be left standing in any Canadian city subjected to an attack by, say, a five megaton thermo-nuclear warhead. Effects of blast and heat alone would destroy everything within three to five miles of point of impact and it is doubtful if any buildings would be left in any way habitable within a distance of six or seven miles from "Ground Zero". Damage in fact would extend outwards in all directions up to a total distance perhaps of twelve miles or more depending upon circumstances. According to the 1956 census, the population of thirteen principal Canadian cities across Canada from Victoria through to St. John's, Newfoundland, amounts to approximately five million people. Studies have been made of the urban characteristics of these cities which include a survey of the population densities and distribution at different times of the day and night. Assuming little warning and no advance preparations, such as evacuation or provision of shelter, the results could be assessed as follows:

Total Population	*Killed*	*Injured*	*Uninjured*
5,000,000	3,500,000	1,250,000	250,000

General Earl Partridge, Commander-in-Chief of NORAD, testifying before a United States Senate Committee, offered his opinion that fifty nuclear weapons could destroy or bring under fire 40% of the population of the United States and 60% of its industry; should the attack be made upon 170 metropolitan areas, i.e., all those with over 50,000 population, a total of some 58% of the population would be affected and not less than 75% of its industry. This result could be accomplished by means of one weapon only per target.

According to a report on "non-military defence" recently published in the United States[1], "With no known military defence measures a completely effective fifty city attack might be expected to cause ninety million deaths in the United States, that is, half of a projected population of one hundred and eighty million." The Report then indicates that with a system of fall-out shelters plus arrangements for tactical evacuation, about seventy million deaths might result. With the same fallout protection, plus three to six hours warning for the large cities, so that tactical evacuation could be carried out, the fatalities might be reduced to thirty million. Finally, if the attack occurred after both strategic and tactical evacuation, lethal casualties might be held down to from five to twenty-five million people, depending on the amount of warning available to the larger cities.

The Rand Report went on to show that without any non-military defence measures whatsoever, a completely effective one hundred and fifty city attack could result in one hundred and sixty million deaths in the United States.

According to a recent issue of Newsweek Magazine, a report submitted to a Joint Congressional Committee on Atomic Energy in the U.S. states that an attack made upon some forty American cities, total population of 60,417,000, could result in 31,123,000 people killed and 9,660,000 people injured. It is understood that recommendations were put forward to this Congressional Committee advocating a blast and fallout shelter policy which could reduce the prospect of casualties to something like fourteen or fifteen million out of a total of one hundred and eighty million population.

IF DETERRENCE FAILS

To summarize the foregoing, it is only fair to say that if deterrence fails we in Canada could expect a situation as best described in the British House of Commons Statement on Defence 1955, which reads as follows: "Large tracts would be devastated and many more rendered uninhabitable. Essential sources and communications would suffer widespread interruption. In the target areas, central and local Government would be put out of action partially or wholly. Industrial production, even where the plant and buildings remained, would be gravely affected by the disruption of power and water supplies and by the interruption of the normal complex inter-flow of materials and components. There would be serious problems of control, feeding and shelter. Public morale would be most severely tested. It would be a struggle for survival of the grimmest kind."

[1] Rand Corporation Study Report No. R-322-RC.

NON-MILITARY PREPAREDNESS

With the foregoing in prospect, it is perhaps not surprising that Governments at all levels everywhere are turning their attention to survival problems. In face of the growing assertiveness of our only potential enemy, those set in authority over us must be searching their collective minds and consciences and endeavouring to obtain the answer to a number of questions. To what extent is the nation really vulnerable? How many Canadian areas achieve enough importance to be looked upon as probable targets? Is it really possible to forecast with any degree of accuracy the probable results of enemy nuclear attack? In the absence of advance preparations such as evacuation or shelters, how many would survive? In view of the implications could our resolution, our morale, be sustained in the face of such a shock? Would there be enough left of the population upon which to base a revival or recovery? Even with Civil Defence in the field of non-military preparedness, can we really accomplish anything? How much can the Armed Services really achieve in this field and to what extent can their efforts be controlled and related to civilian government and administration at lower levels? In face of this threat, is evacuation the only answer and is it really feasible? Can we as a nation afford to allocate great sums of money in support of a shelter policy? Can this be done without prejudice to military defence planning? How much should we tell the people in the face of this threat and its implications? What form of leadership should be prescribed? Assuming the necessity or desirability of some form of "required service" in this field of non-military preparedness, how far can we go without adverse political reverberations? What additional legislation is needed?

CAN WE SURVIVE?

The answer to some of these questions are evident enough in the light of the information quoted in this article. Certainly we are extremely vulnerable but there can be no doubt that the percentage of casualties can be greatly reduced by advanced preparation, including public understanding; although few areas in Canada would achieve much in the way of strategical importance in the Russian mind, the mere fact of our geographical position makes it certain that our civilian population must be prepared to feel the effect of enemy attack on more important targets to the south of us. North American Air Defence operations will result in many interceptions being made over Canadian territory and in consequence it may well be that any Canadian city or area could and would be selected as secondary targets. There is thus the certain possibility of random bombing

which could bring any area or community of the country within the effects of the weapon including blast, heat and/or radiation. Great problems of population control including movement, and reception elsewhere are certain to arise and unless advanced preparations and plans are made and understood by the general public we could expect the worst. Conversely, however, as can be deduced from the references quoted herein, it seems almost certain that we can ensure our survival both as individuals and as a nation by adequate preparation.

LEADERSHIP

The keynote under this heading at the Federal level surely lies in the field of public information. In the opinion of this writer the substance of the various reports quoted in this article and all other relevant information should be given out to the public. "Tell the people." This should be the watchword and the yardstick and nothing should be withheld which is unclassified. In actual fact, all information quoted herein is available to anyone wishing to dig it out of the record. In order to develop confidence and obtain full co-operation however, these statements must be given out by our top political and military leaders, as positive reasons in support of Emergency Measures, Civil Defence or Non-Military Preparedness, call it what you will. It should be stressed that every citizen must accept individual responsibility for his own actions but that if he is willing to conform to a pattern of behaviour in accordance with a national plan for survival, the future of this country and in fact of our civilization could be assured.

It should also be made clear by our leaders that non-military preparedness should be looked upon as an activity rather than as a specific organization. Every agency responsible for the direction of human activity should be required to establish the action to be taken by each individual in that organization in an emergency. What to do in these circumstances should be stipulated as part of the job performance of every individual in government departments at all levels; professional business and industrial organization should do likewise. In fact it should be made clear that acceptance of this principle as a requirement should become part of our daily lives. Emergency training should begin at the appropriate age in all school curricula. Only in this way can an otherwise intelligent people avoid an ostrich-like viewpoint.

EVACUATION OR STAY PUT?

In developing a public understanding of survival planning, certain fundamental facts should be made clear. Our present Civil Defence policy provides for evacuation or dispersal of population if time permits. There is no sure method of survival, but the chances are better if one is not present when the bomb bursts. Even though time does not permit, e.g., when the ICBM or IRBM become the principal means of delivering the weapon, many hours of warning may still be available. Targets of primary importance on this continent are located mainly in the United States. The first wave of enemy attack will be directed at these locations and it is extremely unlikely that every Canadian population centre would be covered at this stage. Even though evacuation as such is an unpopular solution of the problem of dispersal, nevertheless many thousands of our people will wish to "take to the hills" under these circumstances. Therefore better to do so in conformity with a planned procedure than without. In any event the areas around our principal cities must be organized to receive evacuees and administer to their needs on a pre-planned and controlled basis. So why not continue with evacuation and reception area planning as one of the principal features in our survival plan? In no sense would acceptance of this rule out the desirability of both shelter and refuge construction as a further means of saving life. There are, however, practical limitations in this field which must be considered in connection with protection against blast, heat and radiation.

SHELTER AND REFUGE

In the formulation of any opinion concerning the desirability of blast shelters, it should be realized that the average Canadian house or building is constructed to withstand an overpressure of less than two pounds per square inch (2 p.s.i.). Shelter protection therefore must be designed to withstand shock somewhere above this figure if any degree of safety is to be afforded. A shelter designed to withstand overpressures amounting to 2 p.s.i. must be located no closer to the point of burst or ground zero than 10 miles, and for 5 p.s.i., 5 miles. A shelter to resist 30 p.s.i. should be no closer than 1.8 miles away; 100 p.s.i. must be at least 1.2 miles away and even 800 p.s.i. would be destroyed or collapse if it were within .8 miles of ground zero. These figures apply for a five megaton warhead – heavier weapons will extend their blast effect further afield.

Critical studies resulting from tests in the U.S.A. have pointed up the desirability that blast resistance in public shelter design should be about 30 p.s.i. Designed resistance above this figure would be prohibitive in cost in relation to the protection afforded. Estimated costs of shelter on this basis, including items such as land purchase, structure, fixed equipment, food stocks, medical supplies, bunks and bedding, worked out on a per capita basis for shelter

accommodating two thousand or less in the United States, would run to approximately $165.00 for a 5 p.s.i. shelter and say $235.00 for a 30 p.s.i. shelter. Thus if this yardstick is used in Canada, the cost of providing shelters for the five million residents in our thirteen designated target areas would amount to just over one billion dollars. These figures apply to newly constructed shelters and do not include strengthening of present buildings or incorporating appropriate structural design into new construction of larger buildings.

The Rand Report on the other hand advocates a more realistic financial approach to the problem. Here an outlay of not more than five hundred million dollars is recommended, most of which was to be devoted toward construction of fallout shelters, plus further investigation and construction of prototype blast shelters, provision of radiation meters for the whole population together with a program of public education as a means of saving the greatest number of lives in the event of attack. This was based on the assumption that the biggest proportion of the population of the U.S. would become involved in radioactive fallout. This program suggested governmental assistance to the householder for the design and construction of his own basement fallout shelter in the form of engineering advice and suggestion, supply of blueprints, etc.

Unquestionably there are features of this study which could be profitably considered in Canada as a vital and integral part of our survival program. The question which immediately arises in one's mind now, is what agency of government is to be responsible for completing the requisite studies and administering a nation-wide program of this description? Should it be the Emergency Measures Organization and, if so, will they be given the necessary staff of personnel required to complete a survey and prepare designs for issue to the public? Could this be made an additional responsibility of the Department of National Defence utilizing Army engineers for the purpose? Alternatively under the general heading of Welfare should the Federal Department of National Health and Welfare undertake the detail development of such a project? Or will the Federal Government leave this responsibility as a measure to be undertaken by the provinces, each on its own behalf, assisted perhaps by Federal advice and financial support? These questions remain to be answered, but obviously must come up for consideration at an early date if the general public is to be given adequate direction and advice.

ROLE OF THE ARMED SERVICES

The new responsibilities allocated to the Department of National Defence are quite clear and specific in some aspects and not in others. Some comment therefore would seem justified in the public interest. No one will cavil at the desirability and capability of the Military in relation to the control and operation of the public warning system and emergency communications. Nor will anyone disagree with the idea that the Army are best suited by their organization, training and experience to undertake the difficult and dangerous role of re-entry operations in all its aspects. There are difficulties, however, and much detailed planning, acquisition of equipment, training and re-organization to undertake before these tasks can be accomplished. Some of the factors involved are discussed in the paragraphs which follow.

Public Information and Warning

An engineered telephone system has been made available up to this point for transmitting public warning from Air Defence Headquarters to Provincial authorities and "target area" cities. Sirens have been ordered and are available for towns and cities with a population of thirty thousand and over. Many of these have been installed but no one pretends that Civil Defence with the limitations financial and otherwise which have been imposed upon it in the past, have been able to reach anything like the efficiency in this field which obtains in the U.S. In that country a warning can be transmitted from a central point to "warning points", of which there are some 276 located all over the country, in a matter of ninety seconds or less. We have no doubt that the Armed Services will rapidly improve this situation in Canada and that they will be able soon to decide just how the warning is to be conveyed to all people resident in small communities and rural areas. The necessity for this arises from the implications of population control in relation to fallout and in this field the Army have been given full responsibility. This problem has now become one of high importance and the general public will await with interest and some anxiety the details of the plans to be announced. Apart from technical advances such as "NEAR" and the introduction of a simple warning device into private radio sets (BANSHEE), some system or service must be designed to ensure that public information and/or warning can be rapidly conveyed down to the householder in every part of the country. In addition to technical installations and trained operating personnel this problem in our opinion will require much greater emphasis to be laid upon building up the Civil Defence Warden Service such as has been developed in Britain and the U.S.

The Warden Service

The Warden Service functions as an aid both to local police and the Armed Services who may become concerned. A revision of the Warden Service has been undertaken in Britain recently and should be studied by all those concerned with Civil Defence and population control in this country. More than ever before has this Service become the backbone of Civil Defence. Although well developed in certain provinces, notably Alberta and British Columbia and to some extent in Manitoba, this aspect of Civil Defence has not prospered in Canada. The problem of "direction" as opposed to "co-ordination" here again raises its head and some inspired solution and advice to the provinces is required from the highest Federal level. Will this come from the Prime Minister or the Ministers of one of the other Federal Departments concerned; or in the absence of any National Civil Defence Headquarters, will it come from the Emergency Measures Organization? The writer suggests that the importance of this element of Civil Defence is such as to require central direction, advice and assistance at the Federal level. A Chief Warden for the whole of Canada should be appointed to supervise and direct this operation. This individual should be carefully selected and appointed as a senior official with stature and experience. In the absence of any central Civil Defence Headquarters or agency at the Federal level, he could operate from EMO, or alternatively from the Department of National Health and Welfare since the Warden Service, as such, is concerned almost entirely with the welfare of the individual citizen.

Radiological Services

Under Federal direction the Army will now assume responsibility for the radiological discovery and location of fallout areas. Even with the Militia fully equipped and trained in this field, it seems certain that availability of personnel will be inadequate with which to provide full coverage of the total area affected in the event of widespread attack. Hence the need for some structure to provide the basis for integration of this capability available from civilian agencies, such as fire, police, civil defence wardens, civil defence rescue, etc., all of whom must be trained and equipped at the grass root level. Since the army are to have responsibility, why should they not develop within the Militia, a Radiological Service which would provide the trained expert personnel in units and sub-units and to which could be related the various professional and volunteer elements available from civilian services and organizations?

A Radiological Service would seem to be indicated, adequately equipped with appropriate monitoring instruments, transport and communications. To perform this service effectively, air observers and air transport in the form of light aircraft and helicopters, wherever available, should be incorporated into or related to this Service.

Joint Planning

It is suggested that under the new allocation of responsibility to the Armed Forces, senior military commanders such as General Officers Commanding and Area Commanders would be wise to relate their survival planning to existing Civil Defence structure at both provincial and target area levels. This is because of what has undoubtedly been accomplished at these levels and also because unquestionably the numbers available in the Armed Services across Canada would be inadequate in the performance of their new tasks, without the assistance of thousands of trained civil defence volunteers who remain available and willing to serve. It would seem to us that within the scope of this planning it should be possible for a close understanding to be developed as between the Military and the principal Civil Defence officials. Existing sub-divisional areas in our designated target areas could be examined, but since these are closely related to existing municipal structure and traffic requirements, they should be accepted and included in the military design. There would seem to be no objection for military officials, where available, to be detailed in advance, particularly from the militia resident in these areas. Alternatively where military resources are inadequate or insufficient, the Civil Defence plan would include a staff manning pattern of which the military authorities would be cognizant. Some such close intimate working arrangement such as this could be easily established and in this way full advantage could be taken of the several thousand volunteer Civil Defence personnel who have been already trained and have accepted operational commitments in this field. Furthermore, the civilian authorities concerned would acquire confidence in the knowledge that the Army were providing assistance and support from the outset and not waiting until after the event to descend upon a stricken area and only then take over like an "invasion force".

The Canadian Army Militia

Canadian Army Militia in Canada have been given a new lease of life by allocating to them as one of their primary roles the task of Civil Defence. This changeover was first announced about two years ago and at that time was received with mixed feelings and in certain areas with some opposition. The

reason for this was that in these areas the nature of a thermo-nuclear war was at that time not too well understood. Since then a good deal of explanation has been provided from senior military officers who have used the term "survival" in its proper context. A good deal of training has been undertaken under the direction of military commanders, but mainly with the idea that the Militia, as such, would become employable as formed bodies described as Mobile Support Columns, designed to aid a stricken population after attack. Just how the members of the Militia, resident as ordinary citizens within target areas, were to be assembled and equipped outside these areas had not become too clear. The subject has often been discussed and introduced into problems at exercises undertaken at the Canadian Civil Defence College in Arnprior. Here it has been assumed that the first problem facing the Militiaman would be to collect his family and evacuate from the target area to some previously designated point of assembly within the so-called Target Support Area, defined as the area immediately surrounding a probable target area within say twenty-five or thirty miles or more.

The writer feels, however, that the role of the Militiaman in many cases could be pre-planned, provided both the Military and Civil Defence engage in joint planning with a view to achieving a common purpose rather than to continue entirely as separate agencies. For example, in many instances the Militiaman is already enrolled in Civil Defence. Even though this may not be the case, it is suggested that the Military Area Commander in collaboration with the Target Area Civil Defence Authority, could allocate Militia Units to sub-divisional sectors appropriate to the position of their Armouries and residential location of the Militia personnel concerned. Control Centres have to be manned and there seems to be no real reason why both military and civilian personnel trained to these duties should not work together and take up their position as soon as the order is received. Other Military personnel could assist the Warden Services and police in population control duties in the areas in which they reside or are employed. They could help to organize self-help parties on a block or street basis and could thus provide the local grass roots leadership during critical periods so necessary if panic and confusion are to be avoided.

FALLOUT

At the risk of being repetitious, the importance of dealing adequately with the threat of fallout in any survival planning would seem to justify a paragraph on this subject. In addition to the population of thirteen designated target areas in Canada totalling approximately five million, there is the probability of the greater part of the country remaining becoming subject to the lethal hazard of this much discussed product of the weapon. Because of our geographical location and the arrangements for interception of enemy attackers, there is the certain risk of random bombs falling upon any part of the country. Without advance preparation and warning it is possible that total casualties to Canadian population could amount to ninety percent, including seventy percent killed. Conversely, it would seem to be established beyond all reasonable doubt that a minimum expenditure on fallout refuge for each household, plus a monitoring organization and warden service to assist the military in population control could effectively reduce this estimate of probable casualties.

FALLOUT PROTECTION IN NEW YORK STATE

Possibly the most positive action taken in this area of preparation so far is in process within the State of New York, U.S.A. A special "Task Force on Protection from Radioactive Fallout" recently submitted a report to the Governor of this State which was published in the New York Times as late as 7th of July this year. This report is to be the forerunner of legislation designed to afford every individual citizen a chance of survival in the face of this threat. The plan recommends measures to provide every individual with the means of survival without outside help for a period of two weeks following a nuclear attack. In the main these measures comprise three essential items — food, water, shelter. Shelter or shielding designs will be provided so that the individual protected will be exposed at the most to no more than one percent of the anticipated outside radiation. A survival kit is described which will sustain the individual for two weeks in the protected area without outside assistance. Home constructed shelters or refuge would be built on a "do-it-yourself" plan but with the cost of materials, construction, etc., free of local taxes. The report stresses that protection from fallout must be made a cardinal principle of state policy. *"Just as we would move against buildings which were fire traps or were unsafe or unsanitary, so we must modify the buildings which are now radiation traps for our people."*

It seems to us that the State of New York in this regard has set an example which we might follow, provided the leadership and direction is forthcoming from the Federal level. In this regard it has been long considered in Civil Defence circles in Canada that we should recommend to provinces and muni-

cipalities the policy of refuge against fallout and we understand that at the present time this matter is receiving active study and consideration by the ad hoc committee responsible for recommending policies to the Canadian Government. Let us hope that the action taken in New York State will soon be brought to their attention.

NATIONAL (EMERGENCY SURVIVAL) SERVICE (N.E.S.S.)

The marriage of the Military with the civilian authority in Civil Defence so far is one of convenience. Mention has already been made in this article of the desirability of establishing joint planning and closer collaboration between the principals concerned. It must now be understood on both sides that from the standpoint of numbers alone the Armed Services cannot undertake their new tasks without recruiting help from many civilian agencies including Civil Defence. Why not recognize this inescapable fact and make provision for a close and intimate working arrangement on a national basis? In times of emergency the term "National Service" sooner or later raises its ugly head. It will do so again even though the subject in a political sense is anathema to those who are concerned with Government, "of the people, for the people and by the people." This writer, like many others in Canada, for a long time has felt there is a need for a more realistic approach to this problem. But there is no need at this stage to butt one's head against a stone wall. Let us accept the facts of the situation, but get around it in some degree by introducing some form of national emergency survival service on a voluntary basis.

In Canada, according to our advice, in both the Regular Army and the Canadian Militia, there are approximately some 80,000 all ranks only. As of 31st of March, 1959, there were enrolled in Civil Defence across the country some 157,856 volunteer personnel. Nearly nineteen thousand of these have been given Civil Defence training at Federal or Provincial Civil Defence Schools — more than fifteen thousand at the Canadian Civil Defence College at Arnprior. These figures do not include full-time municipal employees such as fire, police, engineers, public utilities, etc., all of whom must be integrated into the business of survival both in the planning and operational stage. This writer suggests that all such personnel should be established on some regular basis in one national organization. The name suggested here is advocated since many people dislike the title "Civil Defence". Perhaps we should make a clean break with the past and all join forces under this new designation. At least it has the merit of making use of the term "survival" in the same sense as that now employed by Federal political and military leaders. Hence the term "Director General of Survival Operations", to describe the new senior appointment to the General Staff at Army Headquarters.

Members of this Service, certainly at this stage, like the Militia, would be serving in a voluntary capacity. Since both the soldier and civilian must work in such close relationship and under similar conditions, it is suggested that an intimate spirit of collaboration could be developed by affiliating local groups of this emergency service to existing Militia and auxiliary units. This would perpetuate a close working arrangement in time of peace and would establish a tradition which could be invaluable in time of stress.

There is also the question of financial compensation both during training and operations. The Militiaman is paid for his services as a volunteer, while attending training, courses of instruction and exercises. The Civil Defence volunteer is not. This represents an anomaly which is even now in the making as a result of the new arrangement. Now perhaps is the time to consider whether or not our interest in survival would not be better served by placing the Civil Defence volunteer on a paid basis similar to the Military. At the same time we could stipulate an obligation for service as result of "call up" procedure in time of national emergency.

If such an arrangement is to be workable, central guidance and direction would be necessary in order to preserve uniformity in the provinces which otherwise might vary in too great a degree. Agreement from the provinces naturally must be forthcoming in support of this idea, but we suggest that most thinking people would agree with the principle, if not in the detail, of its application. If this proposition is considered to have any merit, then some attention would have to be given to regularizing the position across the country in the form of suitable legislation at the Federal level.

NATIONAL LEGISLATION

Eight Canadian provinces at the present time have passed Provincial Civil Defence Legislation which can be invoked by the "Lieutenant-Governors-in-Council" in time of stress or emergency. Most of these Acts also set forth in their provisions the format governing the provincial organization and procedures in normal times. While it is true that emergency powers are available under the National Defence Act and the War Measures Act at the Federal level, it is suggested that establishment of a new service, such as described above, would require new and separate legislation to govern

organization, administration, responsibility and operational control. The structure must be described and responsibilities delineated at certain levels. The legal basis and relationship with National Defence must be indicated for all to see. Distinctions where they exist must be defined in order to prevent confusion in relation to liabilities at different Government levels and with the provinces under the B.N.A. Act. Standards must be established, conditions of service, age, sex, physical and medical requirements stipulated where necessary. Procedures, method of control, all should be covered by the new Act which, we suggest, should be styled "CIVIL EMERGENCY DEFENCE ACT" or alternatively "NATIONAL EMERGENCY AND SURVIVAL ACT". More appropriate titles doubtless could be devised, but there can be no doubt that in the minds of the greatest majority of people concerned with this business, opinion supports the necessity for this type of legislation. We suggest also that the introduction by the Federal Government of appropriate legislation dealing with this matter would in itself serve to point up the importance of survival planning in the public mind. It would afford clear evidence of the Federal intent to raise this question to a proper level of importance. Some form of National Registration, the machinery for which we understand already exists, would be a natural corollary to such a scheme.

CONCLUSION

Space forbids consideration of many other aspects of the Civil Defence problem in Canada, not the least of which is training. These must be left in abeyance. Readers of this article, however, we suggest, cannot escape the conclusion that the present scheme of re-organization now under development seems at the moment to be lacking that positive degree of leadership and guidance from the Federal level which is so necessary if the movement is to prosper. There is evidence of greater interest on the part of our top political leaders and for this we must record our satisfaction. Divided responsibility at this level however seems inevitable under the prescribed arrangement; one cannot help but fear the introduction of needless delay in the adjustment of difficulties that unquestionably will arise. All the matters discussed in this article are relevant to this problem and sooner or later must become the concern of the four Federal agencies to whom responsibility has been delegated. Mainly this will be the concern of the Department of National Defence, since to this Department will fall the task of co-ordinating and uniting the efforts of all the agencies concerned at provincial levels and below in the *conduct* of operations for survival.

Two solutions of the difficulty suggest themselves as being worthy of consideration: the first of these would be to ensure that the principal official within the structure of the new Emergency Measures Organization is given the authority and the means of exercising control and direction of Civil Defence, as distinct from the role presently allocated to him of being merely a "co-ordinator". As suggested earlier, he could be appointed as a "Commissioner" and given the status of a Deputy Minister.

The second alternative would be to acknowledge that General Graham was perhaps right – assuming that such was his recommendation – and turn over command, direction and control of civilian defence in all its aspects to the newly appointed Director General of Survival Operations. In such event the latter could be given a civilian section to his staff which could provide the advice and experience and assist him in the greater volume of work that would arise in the administration of this project. He could report directly to an Associate Minister of the Crown who should be appointed for this purpose only and in this role would become "associated" with the present Minister of National Defence; the latter would thus not become overburdened with the resultant heavy increase in duties, which already must be onerous in the extreme. In the opinion of this writer, the second of these two alternatives or some such similar arrangement will ultimately be adopted as being more economical and in line with the present trend. It could then be left to the Emergency Measures Organization to concern itself with the principal reason for which it was set up – to insure that appropriate measures were planned by all Government Departments to preserve continuity of Government in time of stress, and to provide for regional Federal representation within the chain of events which might otherwise make central government control difficult or impossible.

In either event, the other suggestions and recommendations contained herein remain still pertinent and must soon become the concern of those who must plan for the survival of this nation in the event of attack. Finally, it should be recognized by all and sundry, that Civil Defence has become a doctrine of preparedness: it is now looked upon as an important element in the philosophy of the deterrent and therefore in the preservation of world peace. Evidence of a reduced civilian vulnerability may well govern the decision, other things being equal, whether to attack or not to attack.

(Editorial Note – A recent radio announcement indicated a Government decision to recommend a fallout shelter and refuge policy to the Conference of Provincial Ministers which will take place in the first week of October.)

Human Nature and War

MARCUS LONG

Dr. Marcus Long took his B.A. at University College, University of Toronto, in 1936; his M.A. in 1937; and his Ph.D. in 1940. Several of his works on philosophy are used as text at the University of Toronto where he is Associate Professor of Philosophy. In the last few years, Dr. Long has branched out into radio and television, beginning as a news analyst on one of Toronto's principal radio stations. He is now one of Canada's better known TV panel moderators on international affairs.

BERTRAND RUSSELL believes that there is little hope of abolishing war as a weapon of national policy until those in positions of power show more concern for the preservation of humanity than for military advantage to a particular nation or ideology.[1]

This calls for such a striking change in attitude that Reinhold Niebuhr dismisses the suggestion as too *naive*, certain to crash on the contradictions of human nature and the realities of political life.[2]

Russell argues that the new weapons which guarantee that neither side can win, without paying a frightful cost, are enough to produce the change. Niebuhr disagrees.

"There are men who have the rather desperate hope that the degree of mutual danger will overcome the constant inclination of nations to fear each other more than they fear the danger their enmity has caused for each and both. Were this to happen a really novel factor would have emerged in history. We cannot rule out the possibility that it will emerge, but we cannot have any confidence in its emergence."[3]

To which Russell replies:

"There is no conclusion possible in this march towards insane death except to turn right round and march, instead, towards sanity and life. Our present courses lead inevitably, sooner or later, to the extinction of the human species. We are not *doomed* to persist in the race towards disaster."[4] *Human volitions have caused it, and human volitions can arrest it.*

It is not my intention to pursue this dialogue, interesting as it seems to be. It is enough to show that even philosophers, who are not captives of temporal situations nor subject to the pressures of political demands, can find no easy solution to our contemporary problem.

Niebuhr is by temperament and conviction pessimistic about human achievements. That undoubtedly affects his judgment. There is something deeper. He believes that Russell's proposal involves a change in human nature which is impossible.

I think there is a confusion here between human nature and human behaviour. We may concede, for the sake of argument, that human nature cannot be changed or is not likely to be changed in time to do any good. It does not follow that human behaviour is so rigid.

"Our most refractory problems . . . arise from the difficulties of dealing with the facts of human nature . . . though human nature may be changeable, human behaviour is not, as witness certain small changes in such matters as cannibalism, human sacrifice, the burning of witches and heretics, the employment of sorcerers, the use of thumbscrews in courts of law, the fighting of religious wars even between the Christian sects, duels, and many other similar habits now abandoned, at least in our Western society."[5]

If our present difficulties are not rooted in human nature but in human behaviour then we have a chance; at least that is the view of Russell.

The difference between Niebuhr and Russell, for our purposes, are not quite so serious as they might seem. Niebuhr holds out little possibility of good sense but does not rule it out completely; Russell is convinced that men are capable of more wisdom than they presently show but cannot guarantee it. Since the alternative to a measure of optimism is a rather gloomy prospect a glance at Russell's proposals can do little harm and may even do some good.

Russell, as a philosopher, is concerned with what ought to be done. We know from Ethics (the study of what ought to be done in the moral sphere) that knowledge does not always change practice. There is always a possibility that it will. The examination of the ideal often uncovers defects in what is actually being done and suggests ways to improvement.

Russell thinks that both sides to the present dangerous controversy can be shown to be wrong in some respects. A recognition of their mistakes and a disposition to change them could lead to more satisfactory behaviour.

Both sides, in their public pronouncements, make peace the ultimate objective of their foreign policy. They then mar their promise by giving wrong reasons for it. Each side seems to be more concerned with the benefits it can derive from peace than in peace itself.

Since 1945 the successive rulers of the Soviet Union have preached peace more fervently than many a Southern evangelist has preached salvation. Peace councils have multiplied like toadstools throughout the world peopled, unfortunately, (if I may use the Canadian example), by men and women whose concern for peace has been clouded by their obvious attempt to link peace with the triumph of the communist ideology.

When peace is valued only as an instrument of a particular form of imperialism a cynical reaction is to be expected from the other side. The cynicism is more than justified when a representative of Czechoslovakia informs a conference of the International Union of Students, a notorious communist front, that "when we speak of peace we do not mean just any sort of peace; we mean the destruction of Western imperialism".

The destruction of Western imperialism may be, from the standpoint of the communists, a very worthy objective but it is semantic confusion to identify it with peace . . . unless they want to define peace as Hitler defined it when he offered to give the world a thousand years of it.

The use of peace to promote the interests of a particular ideology is a most reprehensible misuse of a desirable goal. Unfortunately I cannot chide the communists as much as I should like because we too are often guilty of the same sort of distortion. Consider the following statement from Lester Pearson.

"If peace is the primary purpose of our policy, closely allied to that purpose, *indeed part of it,* should be the use of diplomacy for the easing of tension in the world. Such easing of tension not only makes for peace, it also makes sense in terms of *Realpolitik. In such an easier and more relaxed political climate, divisions and contradictions inside the Communist camp can be most surely and effectively exposed. Freedom will have a better chance to grow and triumph, for national despotism is in greatest danger when the international atmosphere is calm.*"[6]

Every person who cherishes freedom and our form of political organization will be tempted to applaud these hopes. But it is obvious that if peace means the end of communism the communists can hardly be expected to work for it, and without their cooperation we have little chance. Surely it is much wiser to think of peace in terms of preventing the end of the human species rather than as a means for assuring the triumph of any particular ideology. The battle for ideological supremacy can be fought on different terms and with different weapons, if such a battle is deemed necessary.

The contemporary misuse of the word peace makes it very difficult to determine what it really means. If it means anything, as I presume it does, it must mean more than the absence of hostilities, otherwise we should have to consider the period since the last war as a period of peace, a most unsatisfactory view. Peace must mean more than the absence of war, more even than the hope that there will never be another war, important as that may be.

We can find a fruitful suggestion in Mr. Pearson's substitution of the word 'neighbourliness' for peace.[7]

Neighbourliness includes geographic propinquity and a concern for others. When the two are combined the results are excellent. It is possible, however, to separate the two and still get desirable results. It should be remembered that modern means of communication have made propinquity a relative term.

Neighbourliness can be described as a way of living and letting live based on the acceptance of restrictions, either voluntarily or under pressure, from accepted authorities with sufficient power to punish violators.

In my neighbourhood I am not allowed to trespass on my neighbour's property, make love to his wife or use his appliances without his express permission. I cannot justify making love to his wife on the ground that I am following the Biblical injunction to love my neighbour nor by proving that she considers me a more satisfactory lover. Such arguments would be considered invalid.

Yet it is arguments like these, based on claims of authority or on expressions of satisfaction on the part of those whose territory has been invaded and possessed, that are used to justify violations of national rights. They have no moral validity. Unfortunately, as in Hobbes' state of nature, the question of moral validity is meaningless until there is some superior power to enforce the restrictions by such means as are necessary. On the international scale Russell suggests a world-government. Niebuhr, if I

may quote him again, considers a world-government impossible until, or unless, we can first form a world-community.

A debate about the precise means of attaining the objective of neighbourliness need not detain us. It is more important to stress its desirability. I doubt if we need any argument stronger than that of Hobbes who pointed out that the alternative to some form of control is to leave the life of man 'poor, nasty, brutish and short'.

Neighbourliness, then, means the acceptance of restrictions, voluntarily or by accepted compulsion, that will enable the nations of the world to live without fear and with a chance to use their resources and skill to raise the standards of life throughout the world.

"It is not only the prevention of evils, but the securing of immense goods, that can result from a cessation of tension between the two groups. Scientific technique has become capable of raising the standard of life in every part of the world, and more especially in the poorer parts. There is no reason except human folly for the perpetuation of a lower standard of life in Asia and Africa than that which now prevails in America."[8]

Since both sides to the contemporary controversy have recently shown considerable concern for the well-being of the unfortunate peoples of the world the concept of neighbourliness should appeal to them. However, as I shall try to show later, even the concern for the unfortunate has been tampered with a greater concern for personal advantage than seems proper. There is some hope that as we have passed through mere coexistence to 'peaceful' and then 'competitive' coexistence we may yet reach the coexistence of neighbourliness.

We are brought back to the philosophic problem of the nature of human nature. If we assume that human nature is not changeable or not likely to be changed in any foreseeable future we will have to appeal to such well-known human motives as self-interest. To promote the cause of true neighbourliness we will have to convince both sides that it is to their advantage; that is not easy.

The experts disagree about the likely damage of a thermonuclear war; they all agree that it would mean such a slaughter and such a dislocation of vital services that civilization, as we know it, would be impossible. If we add to this the known fact that our present weapons and the means of delivering them are only in an elementary stage the absurdity of war becomes obvious. The certainty of destruction for both sides makes the abolition of war a matter of self-interest.

"Given a sane and sober consideration of what is involved (in a modern war) it would not be necessary to invoke idealistic motives, although they could be validly invoked. It would be necessary only to appeal to motives of national self-interest."[9]

Niebuhr, it will be recalled, does not agree that knowledge of the frightful results of war will be enough to prevent war, human nature and self-interest being what they are. The weight of history is on his side. I suspect the practical statesmen of the world are also on his side, which may be offered as one of the reasons why security and peace are so often confused as if they were synonymous or as if security was the essential condition for peace.

It should be emphasized that Russell is not so idealistic as to urge abandonment of security measures nor among those who urge unilateral disarmament in the hope that a good example will be followed or in the conviction that if it is not it is better to surrender than to fight.

Since both sides to the philosophic quarrel agree on the continued need for security some reflections on that problem seem to be in order.

Security involves the adoption of such means as are considered necessary to protect a nation or group of nations from undesired domination by others. At the present time that means the development of weapons of massive destructiveness and means of delivering them that will penetrate any known defence.

It is this that produces the difficulty. No one can say for certain how much armament is necessary. As a result, both sides are engaged in an arms race that has cost trillions of dollars since the end of the last war without bringing us any closer to security. Nor can it do so. Security based on mutual fear, which is what the modern weapons are said to produce, is on a very shaky foundation. Each day brings new dangers of misunderstanding or miscalculation that could bring apocalyptic destruction.

"All history shows that security — or peace — cannot for long be guaranteed merely by superiority of arms. The attempt to do so inevitably provokes countermeasures on the part of those against whom you arm, which in turn makes an even greater effort on your part necessary. The vicious circle of fear and arms, insecurity and more arms begins, and the ending cannot be a happy one when it is not disastrous."[10]

It is not within my terms of reference to discuss what steps should be taken to provide a more sensible sort of security. Many experts have offered excellent suggestions, including the proposal of an international police-force, recruited from other than

the major powers, with sufficient strength to intervene effectively to stop any conflict that might lead to a major war. I am concerned only to show that present methods of seeking security are not in the best interests of either side. When this is recognized then there is the possibility of that change of mood and aim that constitutes the challenge of Russell.

There is a point that might be made. All security measures are in vain if they are designed to preserve the status quo. Nothing can be preserved as it is. This is obvious to the citizens of the Free World who take pride in the evolution of their institutions and policies. Magna Carta is honoured, and rightly so. But it must be remembered that if the barons who wrested those privileges for themselves had foreseen that their action would inevitably prepare the way for universal suffrage and the social welfare state many of them would not have been so insistent.

If we accept the inevitability of change then the purpose of security may be viewed in a different light. It is an attempt to guarantee to our children the right to decide on their own political institutions, using our example, philosophy and experience as a guide, if they so desire.

We would be other than human if we did not want our children to follow in our footsteps and to provide them with the opportunity. This, I assume, holds true for all nations, even for those which, like some of the Arab nations, seem to have little of value to transmit. It certainly holds true for the leaders of the Soviet Union and the United States.

Now comes the possibility of an absurdity. If we try to decide the merits of our rival philosophies today, with the weapons presently available, it is unlikely we will have any children left to decide for or against us.

Claims to infallibility are very dangerous in the uncertainties of political philosophy. Any such claim is made ridiculous by historical events. That is why it seems more sensible to work for the survival of the human species than to contend for the triumph of a particular political creed.

There is a possible implication someone may try to draw from my assertion, viz., that we would be more sensible and more helpful to our children if we abandoned our political creed as a price for survival. This does not follow at all. We have a responsibility to provide our children, so far as we can, with the fruits of our experience and knowledge to help them make desirable decisions. But we must concede the same right to those who differ with us, as the Catholics and Protestants learned to do after many bloody years of trying to solve questions of truth by violence. This applies to both sides.

If both sides are concerned with security only as a means of protecting their preferred theories they run the foolish risk of a war of annihilation. The sooner they find and subscribe to some means of security which will be compatible with seeking to promote their ideologies by means other than violence the sooner we shall start on the path of wisdom.

It should not be too difficult to persuade the communists of the folly of trying to decide the ideological conflict by war. They have the assurance of their philosophy that their system must inevitably triumph. Mr. Khruschev has found double assurance in the remarkable achievements of the Soviet Union since 1917. If they really believe this, and I assume they do, then they ought to cooperate fully, as a mark of wisdom, in all steps to ease the need for present measures of security.

The opinion that Capitalists, frightened at the Communist threat to their regime, would, or could, enlist their 'slaves' to wage aggressive war against the Soviet Union is so absurd that even Khruschev must laugh in his vodka when reminded of this dismal Marxist prophecy by one of his high priests.

There is every reason for the Western powers to consider other means of security than those on which they are presently concentrating. If they do not, they may even find that in the frantic effort to provide protection for their creed, by a concentration on arms, they have destroyed it. Mr. Kennan has reminded us that "the threat (by the Soviet Union) has not been one of all-out military attack. It has been a combined political and military threat, but more political than military."[11]

Since 1945 the communists have won one triumph after another. The threat of the atom-bomb, when the Americans were its sole possessors, did not deter them. No weapons the West now possess will deter them from further attempts to extend their empire. We have concentrated so much on military matters that we have been losing the battle in the political sphere. Security can be purchased at too high a price.

There is nothing reprehensible in the Soviet efforts to win converts to their faith, though one cannot but feel repelled by some of the methods they have chosen. It is characteristic of the supporters of creeds, thoroughly believed, to be enthusiastic evangelists. Some Frenchmen and Americans felt the same need to save their fellowmen when they discovered the value of Republican institutions in the eighteenth century.

It would not be going too far to suggest that one of the causes of our contemporary tension is the

effort of both sides to shape the rest of the world in its own image, political, economic and social, in the hope of ensuring a continuing influence on the thinking and practices of generations yet to come.

It is hardly necessary to prove this about the communists whose efforts are too well known. They believe that their program is the finest ever devised for eliminating injustice from society. They view man as so much a creature of his environment that it is only necessary to change the environment to change man into such a socially responsible and cooperative person the state will wither away because no longer needed. They have never stinted in their efforts, nor raised any moral quibbles about the means used, to promote this creed and swell the number of believers.

Our missionary enthusiasm is not quite as strong today as it was in the age of Enlightenment and revolution when the liberal democratic creed seemed to provide the panacea for all social ills. It is still there.

According to Professor Williams, of the University of Wisconsin, the desire to shape all nations in the American image has been central to American foreign policy since the founding of the Republic. This throws light on the Open Door policy first formulated towards the end of the nineteenth century.

"The policy of the open door was designed to establish the conditions under which America's preponderant economic power would extend the American system throughout the world without the embarrassment and inefficiency of traditional colonialism."[12]

It should be pointed out, in deference to our American friends, that they have always preferred trade to war as a means of promoting their program. War has not been avoided when it seemed to be necessary but, as we have seen in the last two wars, it has been treated as a last resort.

The point is that both sides to the great debate are convinced of the superiority of their own political creeds and want to do what they can to spread the acceptance of their gospel throughout the world. So long as the methods used do not involve war nor means that threaten the possibility of war no objection can be taken; such efforts may even do some good.

The most fruitful field for missionary activity, at the present time, is among the uncommitted nations of the world and the nations being newly born. Any methods which do not involve military action must involve means of enabling these impoverished peoples to achieve a higher standard of life.

Both sides to the debate have been given assistance but both, in their own ways, have been limiting their assistance by hopes of ideological advantage. The Soviet Union, which has only recently entered this field in a substantial manner, gives assistance where it considers its own interests most likely to be forwarded. The United States has made no bones about attaching strings to the gifts and advice it has proffered.

So far the communists seem to have been most successful. They have the advantage that the Western powers have a tradition of imperialism that the Communists could capitalize on, the negroes have been mistreated in the United States, the only atom-bombs ever used were used against Asiatics with the professed intention of saving lives, presumably white lives, and that the United States presents itself as a representative of capitalism.

Capitalism is one of those weasel words which defy adequate interpretation. Most certainly there are few capitalists today who would identify themselves with the classical capitalism of Ricardo which Marx used to such advantage. Classical capitalism concentrated on making profit. The easiest way to make profit is to sell at the highest price and produce at the lowest cost. No matter how one tries to interpret that there remains the feeling that it is a policy designed to make the rich richer and the poor poorer. It is not the sort of policy likely to commend itself to those who have for so long known no condition except that of abject poverty.[13]

I think it could be shown that various factors, including the increased influence of the labour unions, have so changed the character of modern capitalism that it is absurd to keep representing the modern American system by such an outdated name. Under the present system the poor have not grown poorer, as Marx suggested they must. If the Americans are to compete on more equal terms they ought to give more attention to the image of America being presented to the world.

This, I'm afraid, is once again becoming too concrete. It would be better to draw attention to the principle of self-determination so proudly proclaimed by both sides and so seldom practiced by either. A genuine concern for the poorer people of the world rooted only in the desire to speed the industrialization needed to raise their standards of living and with no overt attempt to determine their political loyalties would go far to alleviate the possibility of dangerous clashes. The principle of self-determination is easily interpreted as a need to prevent external subversion by the use of military

means wherever necessary by the side not guilty of the subversion.

There was a time when the multiplication of adherents represented a distinct military advantage. It most certainly did when Lenin stressed the importance of the colonial problem to his fellow-revolutionists. New weapons have lessened the military advantage; the psychological advantages remain. As such they will continue to be a source of temptation to all who believe in the desirability of winning all people to a specific political creed. And as such they will remain a source of difficulty in the promotion of neighbourliness.

If we are to avoid clashes over such peripheral problems a change of attitude is necessary. That is Russell's point. Whether such a change of attitude is really possible remains a question for which no firm answers are available. Niebuhr was right in suggesting that an abandonment of desired objectives because of fear would be something new in the history of man.

"In these circumstances the best hope for the future of mankind lay in the possibility that the governments and peoples of the United States and the Soviet Union might have the patience to pursue a policy which had come to be called 'peaceful co-existence' . . . In circumstances so precarious and obscure, a dogmatic optimism was as unwarrantable as a dogmatic pessimism."[14] And yet there still remains hope that as the great religions like Christianity and Mohammedanism abandoned the use of force for the promotion of their creeds, and the various sects of Christianity learned to live with a measure of tolerance while remaining competitive in their messages, the world will find a way out of a threatened war of annihilation over ideologies which, if man survives, are bound to change their content considerably through the passage of time.

I should be far from advocating either dogmatic optimism or pessimism in the present circumstances. There are so many possibilities of disturbance in our contemporary convulsive situation. We will certainly need more than displays of goodwill.

Nevertheless goodwill is a vital ingredient. There are some signs that it may be increasing because of a growing awareness of the absurdity of thermo-nuclear war. At least we can quote the words of a leader of the United States to summarize the objectives we have been discussing.

"We want all nations to live independently in peace and security under any form of government they choose . . . The United States prefers not to view the world as divided into opposing camps, each struggling and competing for predominance. We regard the world as diverse, with a wide variety of national traditions, cultures and political systems."

Mr. Khruschev would be quick to point out that he shares this view of Mr. Nixon. But words are only words. Until they are translated into action they can become the stuff of delusions. If they are translated into deeds we will have a new reason to hope that what human volition has caused it can correct.

1 Common Sense and Nuclear Warfare by Bertrand Russell. (George Allen and Unwin Ltd., London, 1959).

2 The Structure of Nations and Empires by Reinhold Niebuhr. (Charles Scribner's Sons, New York, 1959).

3 Niebuhr. *op. cit.*, p.272.

4 Russell. *op cit.*, p.28 (Italics mine).

5 Defence and The English-Speaking Role by Norman Angell. (Pall Mall Press, London, 1958, p.11).

6 Diplomacy in The Nuclear Age by Lester B. Pearson. (S. J. Reginald Saunders and Co. Ltd., Toronto, 1959, p.55) (Italics mine).

7 Democracy in World Politics by Lester B. Pearson. (S. J. Reginald Saunders and Co. Ltd., Toronto, 1955. (The word 'neighbourliness' does not appear in Mr. Pearson's latest book).

8 Russell. *op cit.*, p.32, 33.

9 Ibid. p.13.

10 Diplomacy in The Nuclear Age by Lester B. Pearson, p.65.

11 Russia, The Atom and The West by George F. Kennan. (Oxford University Press, London, 1958, p.17).

12 The Tragedy of American Diplomacy by William Appleman Williams. (The World Publishing Co., Cleveland and New York, 1959, p.37).

13 For a very interesting discussion of this point see Image of America by R. L. Bruckberger (translated by C. G. Paulding and Virgilia Peterson). (The Viking Press, New York, 1959).

14 A Study of History (abridged) by Arnold J. Toynbee. (Oxford University Press, London, 1957, p.327).

The Discussion and Formulation of National Security Policy

RICHARD A. PRESTON

Richard A. Preston, M.A., Ph.D., F.R. Hist.S., taught history at Toronto University and the University College in Cardiff, Wales, before the war. In World War II he served with the Royal Air Force. In 1948 he was appointed Professor of History at the Royal Military College of Canada. Dr. Preston is the author of many works on military science and history.

IN MILITARY USAGE "security" is a much over-used word. It can, of course, refer to anti-espionage measures. Used in the principles of war it means a certain condition necessary for the successful handling of military forces. But "national security" has a far wider connotation than either of these. It means the self-preservation and survival of the nation-state and the protection of the state and of its citizens against external attack and against intervention in their domestic affairs. It also means that the state should be able "to live without serious external threat to interests or values which are regarded as important or vital".

"National security policy" includes much more than what used to be called defence policy or military policy, and is not a mere euphemism to make the policies concerned more acceptable to citizens of modern democratic states. A widening of the area within which defence-planners must work has been brought about by developments and trends in modern warfare. Technology and social evolution have ensured that war now affects the state as a whole and the life of its citizens everywhere, and not just its protective forces on its borders. The shrinking of the world makes relatively minor incidents in remote places possess a significance undreamed of a half century ago. National security policy is, therefore, more than the preparation and deployment of defence forces. It includes all internal policies necessary for defence in modern war, and all external policies related to the preservation of situations regarded as in any way essential to the way of life or the essential interests of the nation.

In these times of continuing emergency, national security policy tends to spread itself widely and to embrace almost every interest and activity of the government. As citizens come to believe that the danger approximates to that of a shooting war, governments become increasingly pre-occupied with matters of national security to the exclusion of more normal peacetime interests. But the dividing line between national security matters and other affairs remains vague and obscure.

The "Cold War", coupled with the "Diplomatic Revolution" by which the United States has come to accept a greater responsibility for world affairs, has led to important changes in the process of national security policy formulation in the United States. These changes have in turn been accompanied by remarkable developments in the public discussion of national security policy affecting every aspect of American life. There is great intellectual ferment on these questions below the border and of this ferment only the froth blows into Canada, chiefly in the form of news reports of evidence given by service officers before congressional committees.

At times Americans ask what Canada is doing about the discussion and formulation of national security policy. Despite an occasional flurry like the Arrow controversy, Canada is relatively peaceful on the national security front. Superficially it might seem that a discussion of Canadian national security policy loses itself inevitably in a discussion of Canadian-American relations, a situation which either confuses or distresses American questioners. In fact, however, the answer is neither as simple as that, nor as unsatisfactory. It behooves us to examine what is being done about national security policy here and to compare it with what is being done in the United States and elsewhere to see whether we can borrow anything for our own needs.

Under the parliamentary system of government, Canadian national security policy is the responsibility of the Cabinet. Service chiefs advise, but the cabinet determines what the policy will be and its decision, subject to the approval of parliament, is

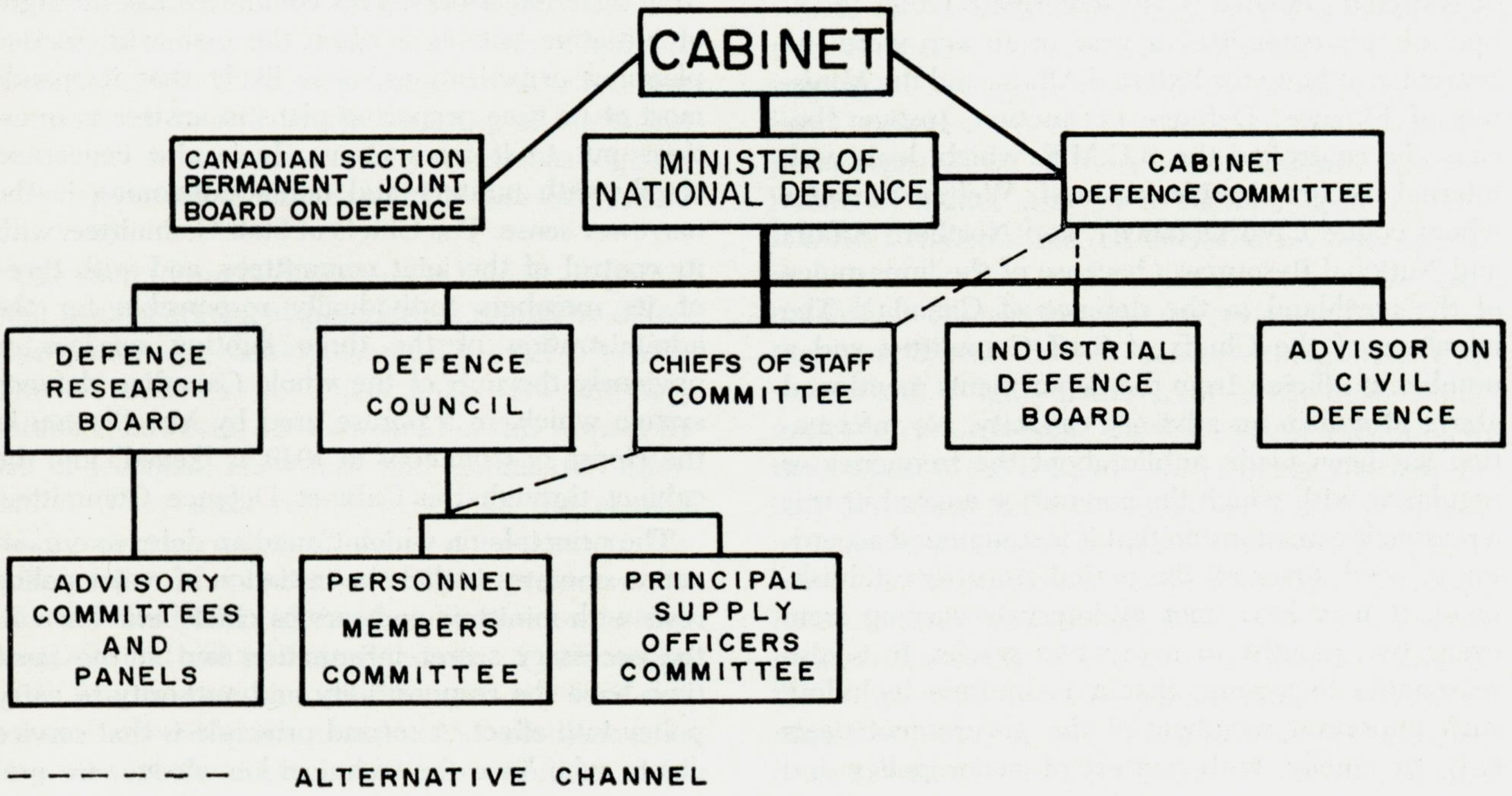
final. While parliament is jealous of its right to be the main forum of discussion of government policy and to have policy first made public within its walls, the officials of the Department of National Defence and the officers of the armed services are responsible to the Minister of National Defence and may not express opinions or reveal information without his authority. Major developments in policy are therefore first announced by the Minister of National Defence, or by the Prime Minister or another Minister as appropriate, to the House of Commons. As the cabinet represents the majority party in the House of Commons, and as an adverse vote against its policy statement would bring about the fall of the government, the government's programme is usually passed as presented, with only such minor alterations as are acceptable to the cabinet.

In accordance with cabinet practice, the way in which a particular decision is reached is not made public; and the procedure of policy formulation in Canada on national security questions has not been explained in detail. We know less about it than about policy formulation in Britain and the United States. A few glimpses have been given from time to time in Defence White Papers and in debates in the House of Commons. In a White Paper in 1947 it was stated that "Planning and strategy are subject to continuous review so as to determine the proper balance between the services and within the branches of each service so as to enable us to use to best advantage the resources of our country to meet the needs as they may develop in the years ahead". But little has been said about how long-term strategic planning is done, or about the extent to which such important matters, like that which Americans call "military doctrine" for the use of new weapons, are considered at cabinet level or immediately below it. With three services competing for a share of a limited budget, there must be an inevitable danger of compromise solutions described usually as "cutting the pie".

A look at what little information about the organization is available throws some light on the problem but does not tell us how far the cutting of the pie is based on sound principles of policy making. In 1948 the Minister of National Defence tabled in the Commons an organizational chart which was printed in Hansard and is reprinted here. The chart was not accompanied by detailed comment and no further elaboration was demanded by the opposition. The

---

CANADA — ORGANIZATION FOR DEFENCE



present organization is presumably rather more complex but does not appear to have been changed in significant features. A brief outline of Canada's defence organization is necessary to make clear the functions of some of the relevant bodies shown on the chart.

During the Second World War, to make quick decisions possible, a Cabinet War Committee dealt with almost all matters relating to the conduct of the war and, because of the emergency and the prestige of its members, virtually became the wartime government of Canada. But it was not a War Cabinet and it remained formally subordinate to the full cabinet. In August, 1945, the War Committee was replaced by the present Cabinet Defence Committee, and the cabinet itself resumed its normal peacetime function of full control of all government business. (The Defence Council on the chart, despite its impressive title, is not concerned with the formulation of policy but deals only with administrative matters.) According to the announcement made at the time of its creation, the terms of reference of the Cabinet Defence Committee were, "to consider defence questions and to report to the cabinet upon major matters of policy relating to the maintenance and employment of the three services". It deals with matters referred to it by the Cabinet, the Minister of National Defence, and the Chiefs of Staff Committee. On major policy it reports to the Cabinet but on minor matters it may give executive directions which are carried out by the minister concerned.

The Cabinet Defence Committee is a small body. The Prime Minister is its chairman and the Minister of National Defence is vice-chairman. Other members of this committee a year or so ago were the Secretary of State for External Affairs and the Ministers of Finance, Defence Production, Justice (because he controlled the R.C.M.P. which deals with internal security), Health and Welfare (under whom comes Civil Defence), and Northern Affairs and National Resources (because of the importance of the northland in the defence of Canada). The members of the Chiefs of Staff Committee and a number of officials from the departments mentioned above attend in an advisory capacity. No information has been made public about the frequency or regularity with which the committee meets but it is a reasonable assumption that it is summoned according to need. Over all the period since its establishment, it may have met at intervals varying from every two months to every two weeks. It is also reasonable to assume that a committee including such important members of the government deals only, or chiefly, with matters of major policy and does not itself make studies of the theory and practice of modern war. It must lean heavily on reports presented by officials at a lower level.

The cabinet's professional advisors on military questions are the members of the Chiefs of Staff Committee acting in a corporate capacity. This body consists of the Chief of the Staff of each of the three services, and the Chairman of the Defence Research Board (a civilian), with a specially appointed Chairman. The Chiefs of Staff Committee meets regularly and is responsible for the preparation of strategic appreciations and military plans for the Minister and for the Cabinet Defence Committee. When such plans involve questions that are not strictly military, the Chiefs of Staff may call the Secretary of the Cabinet or the Under Secretary for External Affairs to attend. The Deputy Minister of National Defence is also normally present at their meetings, and the Chiefs of Staff Committee may also meet under the presidency of the Minister himself. Decisions of the committee have to be unanimous for reports through the Chairman, Chiefs of Staff, to the Cabinet Defence Committee and Minister. If there is disagreement within the committee the Chiefs of each service have direct access to the Minister and make separate reports.

The Chiefs of Staff Committee is served by a number of committees dealing with intelligence, strategic planning, weapons, training, etc. Of these, one of the most important from the point of view of the formulation of national security policy is the Joint Planning Committee which includes the Directors of Planning in each of the services and a representative from External Affairs. This committee has the right of initiative but, as is often the case with service planning organizations, it is likely that it spends most of its time preparing plans in answer to questions put to it from above. It is also concerned chiefly with military and defence planning in the narrower sense. The Chiefs of Staff Committee, with its control of the joint committees, and with three of its members individually responsible for the administration of the three fighting services, is obviously the nub of the whole Canadian defence system which, in a phrase used by Mr. Claxton in the House of Commons in 1949, is "keyed" into the cabinet through the Cabinet Defence Committee.

The principle on which Canadian defence organization operates is that the initiation of major policy rests with ministers and service chiefs who have all the necessary secret information and at the same time have the responsibility and authority to carry policy into effect. A second principle is that service chiefs, who have the technical knowledge, are pre-

sumably mainly responsible for the initiation of policy, but implementation requires the authority of the Cabinet and the Prime Minister. Civilian ministers may, however, initiate their own policy and, after hearing the advice of their professional advisors, set it in motion.

The initiation of national security policy, then, appears to rest largely with the Chiefs of Staff Committee. But this is a predominantly military body and will presumably be mainly concerned with defence policy in the narrower sense rather than with national security policy as now understood. The wider policy remains the concern of the Cabinet and of its Defence Committee. These bodies are advised by several inter-departmental committees on defence whose efforts are co-ordinated by the Secretary of the Cabinet. There are committees to handle such matters as internal security questions, civil defence, emergency measures, and the economic implications of defence problems. A recently announced re-organization of this side of the government has tied in the Emergency Measures Organization more closely under the Prime Minister and the Cabinet through the Defence Committee. The initiation and preliminary discussion of some aspects of national security policy in Canada now rests with some of these inter-departmental committees.

Thus far we have been concerned with the discussion of national security problems and policy by those men who have all the available intelligence information, technical knowledge, and authority. Such officials are inclined to be sceptical about the value of discussion by those who do not have the fullest qualifications in these respects. Whether their scepticism is valid or not, is a matter of opinion. There are grounds for suggesting, nevertheless, that the state will benefit by the fostering of intelligent discussion of national security questions outside those government circles which possess fullest knowledge.

One such forum of discussion in Canada is parliament itself. Parliament possesses authority to determine policy and could technically even over-ride ministers and service chiefs alike. The ordinary members, however, are hampered in this respect by lack of technical know-how and confidential information. They must rely largely, like the general public, on such information as is released to the public and on the discussion of these problems outside the closed doors of the government's committee chambers and offices. Secret sessions of parliament, which are an exception to this rule, are very rare events. To enable the members of parliament to carry out their duties and responsibilities adequately, there should be as great a volume of serious public discussion of national security problems as is possible.

Such discussion is, however, relatively small. There is a certain amount in the public press and broadcast by the C.B.C. Perhaps the most valuable contribution has been made by a handful of able newspapermen who have reported to the public the information that they have been able to collect and the conclusions to which they themselves have come. They are, however, not only few in number, but are saddled with certain inevitable limitations. National security and defence is only one of their many interests; they write for, or speak to, an audience for whom the material and issues must be over-simplified; and they obtain much of their information and ideas from American sources, from the discussion of these problems that takes place on a large scale in public in the United States in government, academic, and other circles.

Discussion of national security problems in public by Canadian military personnel is effectively prevented by the regulations of the service. Firstly there is the difficulty for the individual of distinguishing between the information which he has which is classified from that which is not. Secondly there is the requirement that any publication or statement must receive the prior consent of his commanding officer. It is much safer to refuse consent than to grant it. In Canada, therefore, service personnel rarely take part in public discussion of national security questions. Some institutions, however, cater to this discussion. The United Services Institutes, which are private organizations for serving and retired officers, hear a limited number of speakers, varying according to the activity of the officers of local branches. There are also a number of service periodicals. Most of these rarely venture into the realms of higher strategy or national security. The *R.C.A.F. Roundel* has on occasion an odd article; and the *Canadian Army Journal* a few more, particularly in connection with the review of books. But these periodicals do not concern themselves with serious and weighty matters, especially those which might be controversial. The one striking exception in this respect is the *R.C.A.F. Staff College Journal*, the only periodical in the Canadian services, and indeed in Canada, which can be described as devoting itself wholly to the problem of national security. Naturally its contents are heavily weighted in the direction of presenting matters of interest to airmen. But even in that respect its first two annual issues show some signs that it may be more open to other opinion than is usual with service periodicals. There are rumours

that a naval review is being considered which might also publish high-level discussions of national security problems among other articles of naval interest.

Apart from the press, the C.B.C., service institutions and periodicals, and a few valuable institutions like the Canadian Institute of Public Affairs Annual Couchiching Conference, the only other organization in Canada which has made a significant and lasting contribution to the discussion of national security issues in Canada is the Canadian Institute of International Affairs. The C.I.I.A. has branches throughout the country and publishes a quarterly review, *International Journal,* and other books and pamphlets varying from works of serious scholarship to pamphlets and booklets of a more elementary kind. Many of its publications deal with defence and national security questions. This year, but only for the first time, its annual study conference includes a discussion table on defence problems. The Institute is, however, concerned more with the international relations aspects of national security than with defence problems and implications. Defence questions have a reasonable place in the *Journal* and in other publications; but they have not been given an equal part in its branch discussions and in the list of subjects covered at the annual national study sessions through the years. The reason for this is that it is very difficult to obtain speakers and conference table members who have an adequate specialized knowledge of the problem. This is, of course, a perpetual problem in Canada. The people who have the knowledge are almost all in official positions in which, under our system of government, their tongues are tied. Apart from the Prime Minister, the Minister of National Defence, and a few authorized officers and officials, the only spokesmen on defence questions are a few particularly articulate retired service officers or civil servants. Thus, two recent C.B.C. broadcasts on defence were built around Canadian newspapermen, two retired Canadian generals, a retired Deputy Minister of National Defence, and serving American officers and government officials. The only official statement from the Canadian side was in a film made by the Minister of National Defence for another purpose. This is, of course, in keeping with the perfectly sound Canadian parliamentary principle that only the responsible minister makes public statements; but it is a paradox created by that sound principle that a radio system owned by the government, trying, quite reasonably, to stimulate public interest in, and to guide public opinion on, a matter of vital public concern, found itself unable to use statements of the official government point of view and so had to fall back on material from official American sources intermingled with statements by retired Canadian officials, some of whom have been notorious critics of official policy.

The current volume of discussion of American national security policy on the non-governmental and non-professional level is, when compared with Canadian effort, impressive. And it includes much original thinking. Full and frank discussion takes place not only in the public press, as in other countries, but also in an organized way in the academic world. These discussions range from undergraduate courses in national security policy to the provision of the means for research by mature scholars. It is especially in this latter field where seminal thinking can be done, that the United States has shown its customary facility for tackling a formidable problem by the mobilization of vast resources. Original thinking about problems of national security policy has been organized on a scale with which no other country in the free world can compete.

A brief survey of American programmes for research on national security policy will show how much more is being done there than elsewhere. Among the oldest bodies which have interested themselves in this field is the Council on Foreign Relations founded in 1920. This body, paralleled in some measure in Canada by the Canadian Institute of International Affairs, is devoted to the study of the international aspects of American political, economic, and strategic problems. Its quarterly review, *Foreign Affairs,* provides an outlet for many different points of view on aspects of national security policy. *Foreign Affairs,* like the British and Canadian periodicals, *International Affairs* and *International Journal,* produced by the sister organizations, covers foreign policy in its wider aspects; but with the intensification of the cold war it has become increasingly concerned with the central theme of national security policy, namely the strategic balance between east and west.

While the work and publications of the Council on Foreign Relations have counterparts in Britain and Canada, in other ways the United States does very much more than either of those countries to promote the study of national security policy. The American Social Science Research Council has this year announced its *third* programme for national security policy research and has invited applications for grants to work in such fields as "relations between strategic doctrines and foreign policies, the development of procedures, agencies, and relations at high levels in the formulation of national security policy, implications of the recently enhanced sig-

nificance of the military establishment for traditional American social attitudes, theories or processes of foreign policy making, and institutional or other affects of scientific developments affecting world affairs". In Canada, the equivalent of the American Social Science Research Council is the Canadian Social Science Research Council and this, latterly, has been supplemented by the Canada Council. But neither of these bodies has initiated any comparable special project to stimulate research on defence, national security, or foreign affairs. In fact, the Canadian Institute of International Affairs which at one time received large sums from American foundations, must be one of the few Canadian intellectual organizations that, thus far receives no aid from the Canada Council. It is understood that this is not, however, the result of a settled policy decision made by the Council and therefore may be subject to change.

The United States has also yet other organizations which concern themselves with research in national security policy problems and for which no counterpart can be found in Canada. One of the most productive is the Rand Corporation. Its name stands for Research and Development and it was set up after the Second World War when General Arnold of the U.S. Air Force was anxious to offset the imminent loss of the scientists and scholars who had been recruited for service during hostilities. Rand's interests range through the whole field of science but its production in the social sciences, which represents only a small proportion of its activity, is vast. For a number of years Rand has conducted a programme of research connected with the security and public welfare of the United States and it employs full time research workers in its social and political sciences division.

Altogether, Rand has produced more than two thousand unclassified publications which have been made available to government agencies, individuals engaged in research at universities and institutes, and industrial organizations engaged in scientific research and development. Some of these publications have also been distributed commercially. All are deposited in a limited number of repositories throughout the United States and in a few friendly countries. Recently Rand named the National Research Council as its Canadian repository.

A stout volume, listing the titles of Rand Publications, shows that Rand's interests have ranged far and wide and have allowed a very liberal interpretation of the scope of what it considers to be aspects of national security. In fact, since Rand's research workers are allowed to work on topics of their own choosing, much as is the case with a university staff, some of the topics deal with historical and sociological topics and are not directly concerned with defence. Nevertheless, the titles of others will show the importance of work on national security that is being done. Rand has publications on, "Implications of Nuclear Weapons in Total War", "Deterrence", "Military Implications of Nuclear Weapon Development", "The Worth of the Principles of War", "The Meaning of Limited War", "Soviet Comment on the Doctrine of Limited Nuclear Wars", and "Recent Trends in Soviet Military Doctrine", among many others of similar nature. Among the men who have worked for Rand are Raymond Garthoff, now the best informed man in the West on the Soviet Army, and Bernard Brodie one of the leading theorists of strategy, whose forthcoming book on the strategy of air warfare may well rank with the work of Clausewitz and Mahan.

Rand is supported partly by Air Force and other government funds and partly by non-public money. It is employed by these and other government agencies on classified work and for this work its researchers have access to classified material. The nature and results of these studies are, of course, not made public. Rand's association with the air force might seem to make it a propagandist agency of that service; but the liberal nature of its policy in regard to the work that its men may undertake largely offsets that charge.

Another American institution working on national security problems is Harvard University where the Defense Studies Programme covers both study and teaching at the graduate and undergraduate level and also research work. Harvard's publications, while not as numerous as Rand's have been very influential. They include, "The Integration of National Policy", "The Budgetary Process and Defense Policy", "Government Secrecy and National Security", "Defense Organization", "Soviet Military Preparedness", "Perspectives on Disarmament", "Preventing an Accidental War", and "Alliance and Weapons".

At Princeton military history and defence interests go back well before the Second World War. In 1951 there was set up the Center of International Studies "to bring to bear on the elucidation of foreign policy problems the full resources of available knowledge and modern methods of analysis". The members of the Center work in close association, but each member may formulate his own research project in his own way. The publications of the Center therefore represent individual rather than co-operative effort. The Center took as its first major theme, an enquiry

into "substantive policy formulation with respect to the settlement (of the peace with Japan), the role of the military establishment in this policy formulation, and the nature of the diplomacy required to secure the multi-lateral instruments of the settlement". Books published by the Center include, Gabriel A. Almond, *The Appeals of Communism*; W. W. Kaufman, *Military Policy and National Security*; Klaus Knorr, *The War Potential of Nations*; Lucian W. Pye, *Guerilla Communism in Malaya*; Charles de Visscher, *Theory and Reality in Public International Law* (translated by P. E. Corbett), and Myron Verner, *Party Politics in India.*

Other foundations with a wider interest, because of their appreciation of the increasing importance of national security, have in recent years also begun to concentrate on it. Thus, the Twentieth Century Fund, founded and endowed in 1919 to finance research into economic and social problems, moved into the field of civil-military relations in 1951. It uses the technique of the case study within the disciplines of history and political science in order to examine particular aspects of the interplay of military, diplomatic, and economic factors in the shaping of national decisions. A dozen case studies dealing with the period 1930-55 have been undertaken and the results of these will all eventually be published.

The Brookings Institution, which was also originally devoted to public service through research and education in the social sciences in a general way, in 1946 inaugurated a programme of research and education in international relations focused on the study of the current foreign policies of the United States. A part of the Brookings staff has been organized into an International Studies Group which publishes special studies, an annual analytical survey, and monthly summaries of foreign problems and policies. The methods used by this group approximate to those used by government officials in the preparation of material for the formulation of policy. Analyses of special topics are drawn up as "problem papers" for collective study and are designed to emphasize the fact that policy formulation presents a choice between various courses of action. This work is financed by grants from the Rockefeller Foundation and the Carnegie Corporation.

This account of the unofficial investigations into various aspects of national security problems now being carried on in the United States does not claim to be exhaustive. Yet it serves to show that Americans are doing a great deal of basic thinking about the revolutionary changes that have been brought about by the developments of modern warfare. In addition there are frequent, much publicized enquiries into public policy which are conducted by committees of congress and to which officials and officers from the services are brought to give evidence either in private or in public.

There are many explanations that might be given to account for this degree of difference between the amount of American and Canadian public discussion on national security policy. The great difference in size between the two countries is a partial explanation; and the vastly greater responsibilities of the United States in the modern world are perhaps even more important. There is also the fact that the revolution in American policy from isolation to world leadership within a generation, has made necessary a vigorous policy of re-educating the public mind. This latter factor is demonstrated in many American studies on national security policy by the frequent repetition of the elementary truth that influence in the world is related to military strength, a basic principle which Americans have been very slow to appreciate, that is, however, well understood in countries that have been deeply engaged in power politics for centuries.

More important than these explanations of the greater degree of American discussion is the difference between the systems of government here and in the United States. As was shown above, our parliamentary system follows the principle that responsibility for policy formulation rests with the Minister who must account to the people through parliament. By contrast, the American system of the separation of the powers has created two parallel organs of government which are both interested in national security. While the executive has the responsibility for formulating and carrying out policy, the constitution gives large powers to congress to modify that policy. Congress frequently alters the substance of defence policy by means of its control of the public purse. To obtain information it conducts detailed enquiries into defence policy and calls before it witnesses from the armed forces who, under our system, would not be allowed to speak there. It is in committees of congress, rather than in the Senate Chamber or the House, that the great public debates on American national security policy take place.

Although sometimes defence policies become political footballs, Congress usually takes its responsibilities extremely seriously. Its chief source of information, apart from the evidence which it obtains from official witnesses which it calls before it, is the graphs, tables, statistics and reports running to several thousands of pages, which are presented by

the Defense Departments along with their estimates. These details, difficult for laymen to digest, often obscure the major issues of policy. Nevertheless, many members of Congress show themselves to be remarkably well informed on defence questions. The great volume of scholarly research and publication on national security matters in the United States undoubtedly helps to provide them with facts and ideas. And the committee investigations of defense policy, with all their faults, often dig deep into the fundamental problems of national security.

As regards the active formulation of national security policy, since the Second World War the United States has attempted to re-fashion the executive arm of its government in order to meet the conditions created by the increasing complexity of modern war and at the same time to ensure adequate confidential discussions at the official level. Under the constitution, responsibility for the formulation and execution of policy, subject always of course to the checks which Congress can impose, belongs to the President and to him alone. The American cabinet does not, as does a cabinet under the parliamentary system, help to bear some of that great burden. The American cabinet, though it is now institutionalized by custom, has no constitutional or statutory basis. And so it does not rest on a foundation sufficiently secure to provide it with a continuing authority commensurate with the monumental task of formulating and co-ordinating a national security policy in the dangerous world of today. In the course of American history cabinet activity has varied greatly, mainly as a consequence of differences in the personal characteristics of presidents. On the whole, however, the cabinet has rarely shown itself capable of the discussion of major issues and principles of policy. Rather it has appeared as an informal meeting of the heads of the various government departments at which relatively minor conflicts and overlappings can be ironed out. One result has been that informal groups of advisors (or "kitchen cabinets"), without administrative responsibility, have frequently arisen to act as advisors to the president on major policy matters. President Eisenhower, seeing the weaknesses of the American cabinet, has endeavoured to reorganize it by instituting regular formal meetings, a pre-arranged agenda, minutes, etc.

Before this, in 1947, realising that the safety of the nation depended on the maximum co-operation of the efforts of the various departments of the government, the American congress created the National Security Council by statute to make available to the president the advice of experts and also of the men actually charged with the primary operating responsibility in national security matters. Heads of the important government departments, and of the armed forces, are *ex-officio* members, and therefore the advice tendered by the Council can be based on the known capabilities and limitations of the departments that will administer the policies in practice. Congress took this step in the belief that a sound process for the formulation of national security policy has become essential for the survival of American democracy. Because of the realization that national security policy concerns almost every part of the government, the Council was fashioned to include representatives from agencies of the government which in an earlier age would have been regarded as having little to do with defence.

The creation of the National Security Council did not automatically endow the United States with a new policy formulating body. The Act which created it does not take away from the president the special responsibility that the constitution bestows upon him. The Council is therefore only an advisory body. The extent to which a president uses the Council may vary with his personal inclination. Thus, President Truman made relatively little use of it; but under President Eisenhower it has become more important. Even so, even though not always taken as seriously as it seems to merit, the Council has given the United States a body which has a prime responsibility for the official discussion of national security policy and which has a secretariat that, paralleling the secretariat of the White House, has undertaken very many studies and prepared a vast number of papers and reports on defence and national security questions.

The division of functions between the cabinet and the Council is not very clear, and there is a degree of mystery that is rather unusual in Washington about what matters are on the Council's agenda. An American expert who has had long experience in the Council's Secretariat has stated, however, that there is a "reasonable accommodation" between the National Security Council and the cabinet, by which the latter tends to concentrate on such domestic areas as agriculture, labour, and commerce. The important thing as far as this paper is concerned, is that the United States has in recent years equipped itself with a new central organ for the discussion and formulation of national security policy at the official level, one which includes all the responsible and informed officers of state from the president down, and which holds discussions at the official level. Being charged solely with national security policy and having no other responsibilities and interests, it

may be assumed that it is capable of the initiation of discussion and of a comprehensive approach, both necessary assets for a forward-looking policy in the nuclear age. The existence of its own secretariat provides for a persistence of activity even though some members of the Council may be distracted by other cares. So, in addition to the great volume of academic investigation and discussion on national security policy, the United States now has a system of policy formulation that is, on paper, comparable with that of the parliamentary system of government though, of course, the overlapping powers of Congress still introduce a complication that might destroy executive efficiency.

It may be questioned whether a country with a parliamentary system of government like Canada's needs to encourage as much public discussion on these great issues as presently exists under the American system of the separation of the powers. Let us examine, therefore, the British experience. From before the first World War until just after the second, the British, in time of peace, had in the Committee of Imperial Defence, a body which compared in many respects with the present United States National Security Council. It was advisory, it included the senior responsible ministers and service officers, and it was concerned with the single issue of defence. Furthermore it included members with fewer outside interests and had a permanent secretariat both of which factors served to maintain persistence of effort and initiative. Despite ups and downs in its value and efficiency, the C.I.D. did extremely valuable work in the discussion of the theory and practice of defence.

In 1946 the Defence Committee of the cabinet took its place, the word "Imperial" being dropped in deference to the fact that the responsibilities of the government of the United Kingdom in regard to the defence of the Commonwealth had changed. The new Defence Committee is chaired by the Prime Minister or, in his absence, the newly created Minister of Defence. When first constituted it included certain members of the government *ex-officio*. The committee is charged with the task of reviewing current strategy and co-ordinating departmental action in preparation for war. In 1958, in order to obviate the setting up of *ad hoc* committees for special tasks, the composition of the Defence Committee was re-constituted by a reversion to a practice used in connection with the Committee of Imperial Defence. The Prime Minister is henceforward to decide which members are to attend any particular meeting. At the same time the authority of the Minister of Defence has been enhanced, especially in relation to the ministers of the separate services; and a Chairman of the Chiefs of Staff has become, in effect, the Chief of the Defence Staff and the channel by which the advice of the Chiefs of Staff Committee is tendered to the Minister, the Defence Committee, and the cabinet.

The defence organization in the United Kingdom thus resembles that of Canada in some ways, as might be expected since both have the parliamentary system. In London service departments are tied in to the cabinet through the Chiefs of Staff Committee and the Defence Committee much in the same way as they are in Ottawa. But under the 1958 reorganization in Britain, the Minister of Defence appears to have obtained more power and responsibility than his Canadian counterpart. At the same time the Defence Committee, having inherited the traditions and well-tried usages of the Committee of Imperial Defence, may be a more effective organ for the formulation of policy than the Canadian Cabinet Defence Committee.

It is important to note that debate on defence questions in the British House of Commons tends to be better informed and therefore more useful than in the Canadian Commons. One reason for this is that the British practice is to issue white papers on defence annually, succinct statements of policy, that are much smaller, and therefore more digestible, than the volumes issued with the defence estimates in the American Congress. But they are larger than their Canadian equivalents. These usually appear six or eight weeks before the debate on defence estimates. Furthermore, in both Lords and Commons there are many retired service officers who can speak with a special authority and knowledge on national security questions. British members of parliament are therefore usually in a better position for discussion of the estimates than are either their American or their Canadian colleagues.

As far as public discussion outside Parliament is concerned, the British Royal Institute of International Affairs differs significantly from its Canadian counterpart in that its activities are almost exclusively centered in London and are not dispersed far and wide in local branches. R.I.I.A. panel discussions and other meetings on various aspects of national security policy, open only to members, and attended by well informed officials and officers, constitute a valuable forum for public discussions. As a result, the urgent problems of national security for which solutions are still needed have often appeared in its agendas. Again, the Royal United Services Institute, also centralized in London, holds many similar discussions which are attended largely by

active and retired service officers. For instance, Field Marshal Montgomery's recent influential talks on the strategy of war in the nuclear age were delivered to this audience.

Nevertheless, the need for more public investigation and discussion of certain subjects of national security policies has been felt in the United Kingdom and has led within the last twelve months to the creation of an Institute for Strategic Studies. The notice of the foundation of this body asserted that it was difficult for a layman to form an intelligent opinion about defence policy generally, largely due to inadequate information on the subject. It declared that too often in the past a new weapon like the *Dreadnought,* the tank, the bomber, or the hydrogen bomb had been accepted by the general public as the absolute weapon and it commented as follows, "As western defence policy becomes more and more complex and the technical factors which affect it become harder for the non-expert to understand, so an increasingly wide range of thinking people find themselves in need of an informed background against which to understand and discuss the assumptions on which it is based".

The Institute for Strategic Studies has set itself the following major aim: — "to study the effect of developments both in weapons and international relations upon strategy and upon Western defence and disarmament policy". For this purpose it plans, among other things, to initiate one or two studies a year, "by specially constituted groups in fields either where a fresh appraisal of accepted ideas is called for, or where new ground has yet to be broken". It has also launched a new periodical, significantly called *Survival,* which has in its first issue articles on the vital twin problems, the balance of terror and the principles of dealing with modern nationalists in revolt. The influential *Economist,* commenting on the appearance of *Survival,* noted that the most useful basis for the discussion of strategic and national security problems in Britain is still the Defence White Paper of 1957 and hazarded an opinion that if the Institute of Strategic Studies had existed earlier, that White Paper might have been radically different. Thus, in Britain, where the parliamentary cabinet system operates much like ours in Canada, a need has been felt for the fostering of more research into, and more public discussion of, national security problems.

Many officers and officials are inclined to assert that national security questions are now so complex and technical that they can no longer be discussed by laymen, especially where the latter do not have access to intelligence and other classified information. They add that wide discussion may even be dangerous since it may be based on erroneous assumptions and also may result in dangerous leakages. From this point of view, the soundest policy would seem to be to leave all discussion of these matters to the secret debates of responsible officers.

Clearly a democracy which acted on this principle would abandon the vital principle of control of government by the citizens at large. An absolute blackout on defence discussions is, therefore, unthinkable. In fact, in order to organize adequate public support for policy, it is imperative that the public should be instructed and informed as fully as security permits.

Officials concerned with security are notoriously, and understandably, inclined to "overclassify". They are afraid of leakages. But they automatically create a danger on the opposite side, that of depriving the public of the information with which, when crises occur, they can evaluate and endorse (or reject) government policy. The drawing of the line between publication and security restriction is a difficult matter of judgment.

The second argument against the discussion of national security policy outside the closed circles and locked doors of government offices is based on the acknowledged fact that modern war has become so technical that the ordinary man can no longer know enough about it to come to a sound decision. The force of this as an argument for throttling public discussion is weakened by the fact that, in our system of government, the Ministers who have the real responsibility for making decisions are also lacking in technical knowledge though, it is true, they are in a better position than the public to seek and obtain the best advice. Furthermore a great many scientists and others outside government circles, while without access to secret information, possess the technical knowledge equal to, or greater than, that of many of the officers and officials responsible for national security policy.

The promotion of intelligent public discussion is imperative. Anything less would be a travesty, as well as a betrayal, of democracy. What is more, there is the extra argument that Canada should do her own thinking in this respect and must not leave this duty to the United States or to Britain. Public discussion of this kind, if its limitations are fully realized, may well produce valuable constructive ideas to supplement the thinking of men whose eyes may at times be concentrated so closely on the task in hand that they may neglect wider implications and other significant circumstances outside of their picture of the immediate threat.



"There shall be wings! If the accomplishment be not for me, 'tis for some other."

LEONARDO DA VINCI (1452-1519) genius of the Renaissance, who wrote the first treatise on the mechanism of flight in 1505.

And the "wings" came for Canada on February 23, 1909, when J. A. D. McCurdy flew the "Silver Dart" for Alexander Graham Bell's Aerial Experiment Association and its five original members. Its first flight was for half a mile at 40 miles an hour at Baddeck, N.S.

In the 50 years since, Canada has become one of the world's foremost air powers. Her aircraft manufacturing plants rank high in employment, and high in dollar volume. Canada's airmen gained distinction in two World Wars; and her airlines rank fourth among all nations in passenger-miles flown annually.

The future of aviation in Canada is as limitless as the potential of our young and vigorous nation. In so many realms of national activity — transportation, exploration, defence — Canada will use the air with ever increasing effectiveness.

1909 1959
Golden Anniversary of FLIGHT IN CANADA

C-L CANADAIR LIMITED

CANADAIR

LIMITED, MONTREAL

Golden Anniversary Year of Flight in Canada

$250 Prize Essay

Flight Lieutenant Rundle's paper, "Form Follows Function: A Concept for Canada's Military Organization", was judged the prize winning essay in the 1959 Journal Essay Contest. The judges were Air Commodore W. A. Orr, Group Captain G. A. Newsome, Wing Commander V. C. H. Stuart, and Professor J. I. Jackson.

FORM FOLLOWS FUNCTION:
A CONCEPT FOR CANADA'S MILITARY ORGANIZATION

Flight Lieutenant J. R. Rundle

Flight Lieutenant J. R. Rundle, 28, is a post-war graduate of the Royal Military College of Canada. After leaving R.M.C. in 1953 he took his Bachelor of Applied Science under R.O.T.P. at Queen's, and was enrolled in the Construction Engineering Branch of the R.C.A.F. Following short tours of duty at Air Defence Command Headquarters and St. Margarets, Flight Lieutenant Rundle returned to R.M.C. as a member of the engineering faculty. While there he obtained his Master's Degree. He has recently been transferred to Air Force Headquarters.

"IN EACH of these wars, there was a single saving grace. That was time. Time in which to prolong the struggle, or time in which to prepare. We have come to regard time as our right. But it is not. It has merely been our luck.

Nations do not survive because they are upright, or because they are honest, or because they are generous. Certainly they do not survive because they are rich. Sometimes they continue a while because they are lucky. In the end, however, they can hope to survive only if they are strong."

ALVIN BROWN, The Armor of Organization

In any major war of the future the free world can expect to lose if it makes mistakes in preparing for or fighting the war. I believe that the most serious mistake that can be made is lack of unified command as it obstructs adherence to the primary and cardinal principles of war: "maintenance of the aim" and "concentration of force". Lack of unified command in the United States has led to short-sighted and unimaginative statements of functions such as one made by General Maxwell D. Taylor: "The primary function of the Army is the destruction of the enemy's army, the primary function of the Air Force is to destroy enemy air power and for the Navy to destroy enemy naval power."[1] After reviewing this and statements by Navy and Air Force leaders, Secretary Charles E. Wilson summed up the sad situation: "Each of the armed services has its own particular military philosophy . . . (about) how wars should be fought."[2] The basic difficulty at present seems to be a desire to perpetuate traditional

1959 ESSAY CONTEST

The articles on the following pages are selections from the many entries in the 1959 Staff College Journal Essay Contest. In addition to the Prize Essay, we have printed a representative group of those articles considered to be worthy of honourable mention.

The editors of the Journal have been greatly encouraged, not only by the response to this year's contest, but also by the quality of the articles submitted. It is our hope that the Staff College Journal Essay Contest will continue to encourage serious thought on military matters, and that next year's contest will be even more successful.

— EDITOR

army, navy and air force roles instead of thinking in terms of basic combat functions. We should reorganize our armed forces completely to ensure that all effort related to one basic combat function is under one command. This reorganization should permit the achievement of two fundamental goals: greater combat effectiveness and greater economy.

Canada must dispense with all weapons, men, ideas and organizations which would be ineffective in war. If they are not effective they are simply and purely waste and the government and the armed forces which maintain them are negligent in their responsibility to the country: to make effective use of every dollar allocated to the military. First of all, we must eliminate duplication of noncombatant services and overlapping responsibilities of combat forces. We must further realize that there are limits to the monies that Canada can afford to spend on its military arm. "To arm ourselves into bankruptcy is to accept self-imposed defeat."[3]

Canada, in common with all free nations (including the United States), cannot logically justify any attempt to maintain complete and modern military forces independently. The free world's strength, as with the Communist bloc, depends on one complete military organization, not one for each country. The free nations should each contribute components to supranational military forces which are each designed to fulfill one basic function.

Once a national component has been committed to one of these international forces, the responsibility of the nation should be limited to the adequate support of its component. In the field of combat the commander of this component must be responsible only to the commander of the international force as the effectiveness of this force must not be limited by the political whims of each participating nation. Differences of opinion with respect to the roles and aims of the international forces must be settled in the appropriate international political councils where all the nations must recognize the overriding importance of dealing with the common aim: the containment of militant international communism. International defence diplomacy must be based on a desire for world freedom and not narrow and selfish nationalism. Each free country should contribute components to the international forces on the basis of ability and experience and not on the basis of maintaining territorial sovereignty at any cost. On this point at least the free world must be indivisible.[4]

Briefly then, my purpose in this essay is to present and substantiate a concept for organization which would make possible an effective and efficient Canadian military force. This organization should be functional in nature, should conform to the requirements brought about by our position as a partner in the community of free nations and should show respect for the principles of war and the basic principles of organization. It should be an organization in which we can develop a military force which in Tedder's words is "not an embryo Goliath . . . but a fully-grown David".[5] It should not state definitely what roles should be assumed by or assigned to Canada. The organization must be such that these roles can be changed quickly with the continuing development of Western strategy.

I would give a word of caution to two classes of potential readers. First, to those who view all changes as bad, *per se,* or who believe that if it has to happen it should happen slowly, I would quote Lord Tedder's aphorism: "The last war is not modern — it is out of date".[6] Many of the things done in the last war would be fatal if we tried to duplicate them in a future war. Second, to those who view all changes as good, *per se,* and are willing to accept any proposal after only cursory study, I would suggest a skeptical and cautious approach to any plan for organization which purports to be "the answer". You must develop and use your intellect to appraise and constructively criticize proposals on serious military subjects.[7]

The traditional guiding principles, the ten principles of war, of course have a direct bearing on military organization; and a survey of this relationship brings out a number of important points. Selection and maintenance of aim is an obvious example: the organization must be such that its aims can be selected and defined clearly and without obvious contradictions. The major commands must not be pulled in different directions by a multiplicity of primary and secondary aims. In actual practice, the aims of organizations are often not clear to people in them; subordinates infer that the basic aim of a command is different from what it actually is or put too much emphasis on secondary aims and thus defeat the intentions of their superiors.

The second principle of war is maintenance of morale. It has been said that success in battle is the best stimulant of morale. Surely the substitute in peace or in "cold war" is effectiveness or confidence of success in a future battle. This is especially true in a democracy where members of armed forces should be expected to commit their minds as well as their bodies and hearts to their service.

If the soldier does not believe that the organization to which he belongs would be effective against an enemy, his morale cannot be expected to be high. Furthermore, an ineffective organization would dis-

courage intelligent people from joining the armed forces. Every member of the armed forces must be prepared to give a positive answer to the question, "Am I doing something worthwhile?"

The armed forces must be organized so that functional combat commands can be established, disbanded or altered on very short notice to conform to changes in aims or equipment. The combat commands cannot be permitted to attain the sense of permanence that the army, navy and air force presently enjoy. Secondly, there must be a unified combat support organization which can expedite the rapid formation of new or altered combat commands.

The need for formal cooperation (liaison) at the lower levels should be reduced as much as possible by ensuring that combat commands are largely autonomous. At the higher levels of course, liaison is vital between combat commands and the combat support organization and between the military and political organizations. With respect to overall policy and plans there is a great need for effective cooperation among the free nations. In achieving economy of force and cooperation Slessor states that we should "learn to think really internationally".[8]

In our discussion of some of the principles of war as they relate to organization, certain considerations relating to the basic principles of organization were also brought out. At this stage we should briefly review these principles as they relate to our overall military organization. The reader is invited to think of violations of these principles from his own experience and knowledge. To do this, do not confine your study to official organization charts but consider what actually happens. Consider how ways have been found to circumvent these principles resulting possibly in immediate benefits but confusion and inefficiency in the long run. We must do more than pay lip-service to these established principles.

To achieve unity of command or singleness of supervision no member of an organization should be responsible to more than one person regardless of the means of stating the responsibility (officially, implied, or accepted as the common practice).

To ensure rational assignment or a strictly functional organization each function involved in the mission of an organization should be assigned to one individual who may or may not have others assisting him. When he does have assistance, each of his immediate subordinates must likewise be responsible for clear-cut and non-overlapping portions of the larger function. This process repeats itself from top to bottom of the whole military organization.

Optimum span of control is achieved by ensuring that the number of individuals responsible to a superior is not more than he can feasibly and effectively coordinate and direct. The actual number is affected primarily by the level of the subordinates' activities, their physical location and the proportion of time that the superior has available for supervising as opposed to doing.

The principle of delegation of authority means that when a functional organization exists there is authority commensurate with responsibility for the performance of each function. This principle can never be violated. It is a positively stated axiom. If authority does not exist, then responsibility does not exist, even if an organization chart or other paper states or implies it. The statement of responsibility is then a pretense. The corollary of this principle is that organization does not exist without delegation of responsibility and authority.

It is important to note that the principles of organization I have mentioned can apply only to individuals and not to groups or units. Group responsibility is anti-organization. Notwithstanding the specialized work which at present can only be done by a commander's staff, one might reasonably ask (as I do) if the whole concept of "staff" is proper in a military organization. In practice does not staff commonly violate the spirit of Unit of Command and withhold authority required for efficient performance of a function, the responsibility for which is nominally charged to a line subordinate? Brown states that "military enterprise will be better off, the sooner it forgets this artificial distinction between line and staff: the sooner, indeed, it forgets the name 'staff'. It will be better off when everything that contributes to the military purpose is regarded as an integral part of a single stream of administration, to be organized as such."[9]

Further dangers are inherent in an organization which employs a large "staff" in a headquarters remote from the line units. If this staff insists on retaining detailed authority, it must accept the responsibility for detailed work as well. In practice this seems to result in large quantities of non-productive work of doubtful importance (paper-massaging) in the headquarters and the line units. Furthermore, since this headquarters staff is physically remote from the problems it tries to solve, it generally lacks the sense of urgency required for efficient decision making.

Waste of brainpower is inherent in any non-functional organization. When two or more people are performing the same function in different parts of an organization (for instance, many of the senior non-combatant officers in the three service headquarters) they are in effect wasting a large portion of their

effort. Then, to ensure uniformity of policy they form committees which only reaffirm my belief that non-functional organization is wrong. One of the stated purposes of tri-service committees is to form collective judgments; but could not the same end be achieved more efficiently if these members were working together all the time with one man having the final responsibility? In addition to the waste involved in this system two other things come to mind. First, responsibilities cannot be effectively delegated to a group. Second, committees involve meetings and conferences in which, it has been said (and too often proven), that conversation replaces the loneliness of thought and the dreariness of labour.

Delegation of responsibility and authority must extend to the lowest level of the organization. They are prerequisites to initiative which in turn is a prerequisite for promotion. I believe that the only way to develop a managerial corps capable of efficient work at a senior level is to give junior officers the opportunity to develop their managerial abilities. It would seem that in many cases of insufficient delegation of authority there is a lack of courage on the part of the superior. He is afraid to accept responsibility for his subordinates' errors. This attitude is a negation of effective organization. In addition, if authority is not delegated to personnel at all working levels they will have little incentive to be economy minded.

Balance is an attribute of organization that is frequently proclaimed to condone illogical development. Balance in organization should only mean that the various units are developed in accordance with their relative importance and real needs. It does not mean that we should have three services of about equal numerical strength. The only place for balance of power in military forces is between the overall forces of the Communist bloc and the free world.

The concurrent need for both specialization and general knowledge poses a very difficult problem in our armed forces. Highly skilled specialist officers are required even at senior levels and at the same time most senior officers especially in the combat commands require a fairly complete knowledge and understanding of all aspects of warfare and technology. Most junior officers will need to be specialists and they must therefore treat their jobs as occupations and not as avocations. The problem arises then of giving them experience and training in other fields so that with inborn ability they will have the potential to be suitable commanders of forces alien to their original specialty. Of course this problem has always been with us, but it is growing all the time. Just as in the past cavalrymen and gunners have risen to command armies one would now have navigators or engineers rising to command air defence forces or anti-submarine forces. In World War II several commanders of multi-service forces proved that it was possible to command outside their original service but many of them showed by their actions that they needed more training and experience with other services. It would seem that one vital factor in this problem is the attitude of the specialist non-combatant officer. He must always think of his specialty in terms of its support to combat and never as an end in itself. It seems desirable then that specialist non-combatant officers have close contact with various combat forces at several stages in their careers and that specialist combat officers broaden their knowledge and understanding of alien forces after gaining senior rank by moving into a general combat list in which they can be employed in any combat force.

Let us now apply the preceding thoughts in a general proposal for Canada's military organization which is shown in the accompanying chart. This organization is according to basic functions rather than three separate armed forces. Under the Commander-in-Chief are two major central divisions; one for combat support and the other for controlling. Canada's combat forces are shown as components of international forces; for instance, an anti-submarine command subordinate to NATO.

It is obvious that the principle of Unity of Command has been broken in one place in this organization. This is necessary because the Canadian components of combat commands must operate only under their international commanders with respect to combat but are dependent on Canada's central military organization for combat support. The effect of this apparent defect is reduced by making it very obvious who has two superiors. Only the Deputy for Combat Support in each combat command would have two direct superiors.

In general, the duties of the central combat support and comptroller divisions with respect to combat commands would be as follows:

(a) To define basic administrative and technical policies which would be approved by the Commander-in-Chief.

(b) To define detailed policies and procedures which would normally be followed by the combat commands. However, the commander of each combat command would have the power to set aside any of these detailed policies and procedures that arbitrarily restrict his ability to effect economies. He would, of

course, have to accept full responsibility for the changes he makes and should be able to prove that these changes do, in fact, increase efficiency and do not affect safety adversely. The line commander would have the responsibility and the necessary authority to completely manage the personnel and money which is allotted to him in his budget.[10]

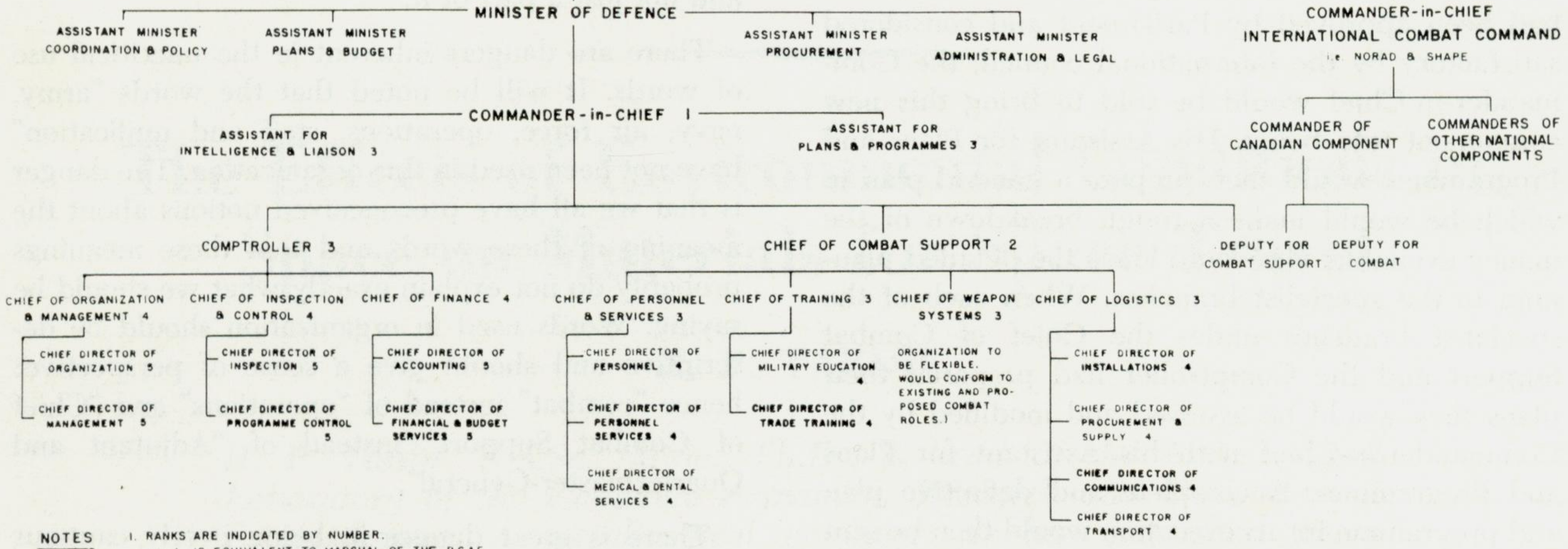
(c) On request, to give advice and do specialized work beyond the capability of the combat command.

In this connection it should be noted that the combat support organization within a combat command should be small. It should not be a duplication of the central combat support organization and thus take on specialized detail work. It should just be large enough to permit the commander to effectively use the authority which he has been granted. On the other hand all personnel directly involved in combat operations would be part of the combat commands. There is no central headquarters organization for defining tactical concepts and preparing detailed combat plans. These are jobs for the international combat commands. Canada would, of course, provide officers to fill responsible positions in any force to which she makes a contribution.

One significant break with tradition in this organization is that there is no deputy minister and that the Commander-in-Chief is responsible directly to the Minister of Defence. This means that we would adhere to a more fundamental and logical tradition: the senior operating head of a government department is responsible directly to his minister.

There would be no separate defence research organization. The scientists would be employed in appropriate specialist branches. The majority would probably work under the Chief of Weapon Systems. Since pure and applied scientific and operational research will become steadily more important in all military activity I suggest, in partial agreement with Mooney[11] that all defence scientists should be in the armed forces. They would then be in the logical position of being able to hold military command in their specialized activities. For instance, it would be

PROPOSAL FOR CANADA'S MILITARY ORGANIZATION



NOTES

1. RANKS ARE INDICATED BY NUMBER.
   i.e. 1 IS EQUIVALENT TO MARSHAL OF THE R.C.A.F.
   2 " " " AIR CHIEF MARSHAL
   3 " " " AIR MARSHAL
   4 " " " AIR VICE MARSHAL
   5 " " " AIR COMMODORE

2. ASSISTANT MINISTERS ARE MEMBERS OF PARLIAMENT BUT ARE NOT IN THE CABINET. THEY WOULD EACH HEAD COMPACT CIVILIAN ORGANIZATIONS.

3. THE ASSISTANT MINISTER FOR PROCUREMENT REPLACES THE MINISTER OF DEFENCE PRODUCTION.

4. THE OTHER ASSISTANT MINISTERS AND THEIR ORGANIZATIONS WOULD PERFORM FUNCTIONS NOW CARRIED OUT BY THE DEPUTY MINISTER AND HIS ORGANIZATION.

5. THE ASSISTANT FOR INTELLIGENCE AND LIAISON IS DIRECTLY RESPONSIBLE FOR MILITARY ATTACHES, LIAISON GROUPS IN WASHINGTON AND LONDON AND THE SURVEY ESTABLISHMENT.

6. SEVERAL OF THE BRANCH HEADS IN THE COMBAT SUPPORT ORGANIZATION ARE RESPONSIBLE FOR FIELD UNITS.
   i.e. CHIEF DIRECTOR OF MILITARY EDUCATION FOR SERVICES COLLEGES AND NATIONAL DEFENCE COLLEGE ETC.
   CHIEF DIRECTOR OF PERSONNEL FOR RECRUITING UNITS AND MANNING DEPOTS.
   CHIEF DIRECTOR OF MEDICAL AND DENTAL SERVICES FOR MILITARY HOSPITALS.
   CHIEF DIRECTOR OF PROCUREMENT AND SUPPLY FOR SUPPLY DEPOTS.
   CHIEF DIRECTOR OF INSTALLATIONS FOR CONSTRUCTION AND MAINTENANCE UNITS.
   CHIEF DIRECTOR OF TRANSPORT FOR TRANSPORT UNITS NOT AN INTEGRAL PART OF COMBAT COMMANDS.
   CHIEF DIRECTOR OF COMMUNICATIONS FOR COMMUNICATIONS UNITS AND SYSTEMS NOT AN INTEGRAL PART OF COMBAT COMMANDS.

7. THE CHIEF DIRECTOR OF TRADE TRAINING IS, IN EFFECT, A COORDINATOR OF TRADE TRAINING IN ALL THE COMBAT SUPPORT BRANCHES AND IN THE COMBAT COMMANDS. WHILE THE INDIVIDUAL TRADE SCHOOLS WOULD BE SUBORDINATE TO THEIR RELATED BRANCHES AND COMMANDS THE CHIEF DIRECTOR OF TRADE TRAINING WOULD ENSURE UNIFORMITY OF STANDARDS AND QUALIFICATIONS AND WOULD PROVIDE ASSISTANCE IN THE ESTABLISHMENT AND OPERATION OF THESE SCHOOLS.

8. THE CHIEF DIRECTOR OF MILITARY EDUCATION WOULD BE DUALLY RESPONSIBLE FOR DETERMINING THE EDUCATIONAL NEEDS OF OFFICERS AND FOR EDUCATING THESE OFFICERS.

possible for a scientist to be the Chief of Weapon Systems. I do not believe that the safeguarding of the scientists' professional freedom would be an insurmountable problem.

Although the functioning of this organization is fairly obvious a few details might be clarified if we consider what would be expected of the different people in it during the formation of a new combat command.

The initiative for forming a new command could come from several places. The Assistant for Intelligence and Liaison would be responsible for being aware of a possible need for the new command and would so inform the Commander-in-Chief. At the same time the Assistant Minister for Coordination and Policy might become aware of the need through foreign political contacts. When the need was recognized in the senior political agencies of the free nations the appropriate international council would meet and define in general terms what should be done and the approximate participation by individual nations. The Assistant Minister for Plans and Budget would evaluate the proposal for Canada's contribution and stipulate the approximate financial outlay that could be made for this endeavour. This would be passed to the Assistant for Plans and Programmes who would prepare a plan in military terms of the composition and activities of the Canadian component. After this plan or its modifications had been approved by Parliament and considered satisfactory by the international council, the Commander-in-Chief would be told to bring this new component into being. His Assistant for Plans and Programmes would then prepare a general plan in which he would make a rough breakdown of the money available. He would leave the detailed planning to the specialist branches. When each of the specialist branches under the Chief of Combat Support and the Comptroller had prepared their plans they would be assessed and modified by the Commander-in-Chief with his Assistant for Plans and Programmes. A complete and definitive plan and programme for its execution would then be sent to the Minister for approval. When approved it would be put into effect immediately, with each person in the central organization performing his special role. The whole procedure of course would require a high degree of coordination and no two situations could ever be handled in the same way. The main point is that responsibilities in this organization could be definitely fixed.

The actual establishment of the new combat command would not take place until the central organization could present to the commander of the new command a force which could immediately commence training and operations. This, of course, means that adequate money, supplies, personnel and installations would be available right at the establishment of the command. Until the official establishment of the command it is quite likely that the commander-designate and his deputy for combat support would work closely with the Assistant for Plans and Programmes. The commander and his deputy for combat would also be working closely with the commander-in-chief of the international combat command.

We now need to consider some of the problems associated with this new organization. The solutions to these and other problems should be developed in light of a basic test suggested by Kissinger: "The test of an organization is how naturally and spontaneously it enables its leadership to address itself to its most severe challenges."[12]

One major problem concerns existing service, corps, or regimental traditions. Where these traditions can be carried into the new organization without difficulty they can do good by sustaining and improving esprit de corps and loyalty, but if a tradition tends to be confusing or contradictory with respect to loyalty to the military organization as a whole it should be thrown out. Esprit de corps must be based around a complete functional organization and not just a part of it.

There are dangers inherent in the uncritical use of words. It will be noted that the words "army, navy, air force, operations, staff and unification" have not been used in this organization. The danger is that we all have preconceived notions about the meaning of these words and that these meanings probably do not explain exactly what we should be saying. Words used in organization should be descriptive and should give a sense of perspective: hence "combat" instead of "operations" and "Chief of Combat Support" instead of "Adjutant and Quartermaster-General".

There is great danger in being overly cautious when reorganizing. Attempts to obstruct the complete reorganization should not be condoned. If a senior officer does not believe in the basic functional concept he should not be a part of the new organization. On the other hand, constructive criticism of details should be welcomed. We must never forget, however, that there is no place in our armed forces today for what the army, navy, and air force used to be. A forward looking attitude of mind must be cultivated in all personnel throughout their whole careers.

We must remember that the organization presented here is just a piece of paper. Without able men filling the senior positions it would be worthless. These men must be efficient managers as well as experts in their specialized field and must be able to consider their responsibilities in proper relation to the greater responsibilities of the whole organization.

A case would probably be made against this organization because it presumes that all combat forces would be under international control. We simply cannot afford to worry about loss of Canadian sovereignty or foreign command of Canadian troops. We must realize that it is only within the framework of international combat commands that Canada can have any strong and effective military forces. Only if Canada commits key elements to the international commands can our diplomats be in a position to bargain in matters concerning Canadian sovereignty. Furthermore, it is from such an organization as presented here that Canada can best provide able officers for senior positions in the international commands. To make public outcries against violations of Canadian sovereignty is only to admit our feelings of insecurity. We must commit our whole military strength to the free world if we are to be respected by the free nations. We must contribute forces which make these nations depend on us.

If we believe that an organization similar to the one presented here is necessary in Canada the same must be equally true of all other free nations. Canada can, and I think should, be the leader in this vital endeavour. If we develop a functional military organization all other free nations can benefit from our experience and can use our organization as a guide towards achieving decisive benefits in economy and military effectiveness.

[1] As quoted by H. A. Kissinger, *Nuclear Weapons and Foreign Policy* (New York: Doubleday Anchor, 1959), p. 40.

[2] As quoted by Kissinger, *op. cit.*, p. 41.

[3] Sir John Slessor, *Strategy for the West* (London: Cassell, 1954), p. 48.

[4] See Chapter 3 of Slessor's *Strategy of the West* for an excellent development of this thought.

[5] Lord Tedder, *Air Power in War* (London: Hodder & Stroughton, 1948), p. 28.

[6] Tedder, *op. cit.*, p. 20.

[7] Wing Commander Gellner's essay, "We Are Not the Best", *R.C.A.F. Staff College Journal*, 1958, forcefully discusses the importance of intellect in our armed forces.

[8] Slessor, *op. cit.*, p. 44.

[9] Alvin Brown, *The Armor of Organization* (New York: Hibbert Printing Co., 1953), p. 50.

[10] This proposal is a logical outcome of Group Captain F. R. Sharp's "Concept of Management for the R.C.A.F." as described in the *R.C.A.F. Staff College Journal*, 1957.

[11] Dr. C. M. Mooney, in his essay "The Military Challenge Today" in the *R.C.A.F. Staff College Journal*, 1958.

[12] H. A. Kissinger, *Nuclear Weapons and Foreign Policy* (New York: Doubleday have Anchor, 1958), p. 234.

The Effects of Environmental Conditions in Space on Materials for Space Travel

H. P. TARDIF

H. P. Tardif, B.A.Sc., M.Sc., Ph.D., is head of the Metallurgical Laboratory of the Canadian Armament Research and Development Establishment. A metallurgical engineer, he has published many technical articles in professional journals.

UP UNTIL very recently the only known objects on earth to have travelled through space and entered our atmosphere were meteorites and possibly tecktites, those glassy lumps found in large patches in many areas of the world.

Considerable studies were carried out on them with the hope that their internal structure and properties would reveal how they had been affected by conditions in space and during re-entry. It is known for example that tecktites contain considerable amounts of radioactive isotopes, beryllium 10 and aluminium 26, that are formed by cosmic rays in space. It was hoped that the findings of these studies could be applied to the design of ICBMs and satellites in order to solve some of the problems pertaining to the behaviour of materials under these unfamiliar conditions.

Although valuable data were found from such studies, the rapid scientific developments of the last few years now permit the sending of our own specimens outside the atmosphere, and their recovery after re-entry, as has been done at least once with the Jupiter's nose cone. What is more, specimens can now be sent far into interplanetary space, and can even radio back data about their environments and about their reactions to these environments.

Consequently, it seems very opportune at this time to consider the various environments prevailing in space and to discuss their effects on materials of future space ships.

But before going any further, it may be well to define what is meant by space travel. Space travel may be thought of as atmospheric, earth planet or moon orbiting, interplanetary, interstellar or intergalactic. Although it is too early to foresee conditions in the far interstellar or intergalactic space there is good reason to believe that there may exist in these far distant reaches, conditions and environments absolutely unknown to us at this time. One example would be the possibility of the existence of anti-matter. However it is reasonable to assume that the conditions found in interplanetary space will also exist at these great distances, and we will limit this discussion to these conditions.

It is fortunate that the latest investments and developments in space technology have already begun to pay off in the form of new knowledge about the conditions in space, particularly on radiation, temperature and meteors. The effect of these and other environments will now be discussed.

Cosmic Radiations

An exciting experiment to follow was the plotting of the now called Van Allen radiation belts by the first satellites. Preliminary measurements by Explorer I showed that the average increase of cosmic ray intensity at about 200 miles altitude was twelve times that at the surface of the earth but that this intensity fluctuated considerably with time and from place to place. At higher altitude the radiation was strong enough to jam the Geiger counter tube of Explorer III. Explorer IV was equipped especially to overcome these strong radiations. Finally Pioneer III travelling at much higher altitude found two radiation belts; an inner belt from 1,400 to 3,400 miles and an outer belt from 8,000 to 12,000 miles above earth's surface. These radiations consist of atomic particles from the sun, mainly protons and primary electrons retained captive by the earth's magnetic field. The maximum intensity of 25,600 counts per second at the centre of the belt is equivalent to 10 roentgens per hour if the particles are electrons and about 100 roentgens if they are protons. The exact type of particle has not been determined. It is thought that the outer belt consists of protons and electrons while the inner belt consists of the much more dangerous high energy neutrons.

It is known that the interaction of high energy radiation with matter causes severe disturbances in the space lattice which in turn cause subsequent changes in the properties of materials. In ordinary metals, the density, thermal properties, magnetic properties and electrical resistivity can all change in certain cases by appreciable amounts. Even the grain size and the crystal structure may change, as has been observed for tin, phosphorus and possibly zirconium. In alloys, irradiation tends to stabilize the high temperature phases. The yield and tensile strengths of metals and alloys are generally increased but unfortunately the impact properties and especially the transition temperature are decreased.

Semiconductor materials are extremely sensitive to lattice imperfections, their properties being altered by orders of magnitude under irradiation where in metals these changes are only fractional. Many semiconductor materials are already used in electronic devices and changes in resistivity, carrier mobility, photo conductivity, etc., will adversely affect their operating characteristics.

In plastics, radiations cause very large and complex changes in the molecule such as crosslinking, degradation, unsaturation, etc., which in turn considerably affect the mechanical and physical properties. In polyesters, for example, the tensile strength and modulus of elasticity are increased while the elongation is decreased.

It is evident that many aspects of space travel will be affected by radiation problems alone. Secondary effects will also take place, such as the production of X-rays when primary electrons will hit the skin of the ship, and thus the choice of the material may be important if life in the ship is to be protected.

Solar Radiation

Radiations from the sun include X-rays, ultraviolet and corpuscular radiations. The overall effect of these radiations on materials may be quite different from that observed on earth. We do not know much about the effects of many of them, for example, the ultraviolet radiations which are absorbed or filtered out by our own atmosphere. Recent tests have shown that organic plastic materials will simply disintegrate under intense ultraviolet exposure.

Space ships will be fully exposed to these radiations and the familiar effects of weathering and changes in colour taking place in fabrics, plastics, glass and paints will probably be greatly increased.

Temperature

Although temperature problems during aerodynamic heating in the atmosphere have been extensively studied, little was known about temperatures in space. Temperature sensing devices fore and aft in the skin of Explorer I have shown a temperature spread of 750°F, the temperature varying from 150°F below zero on the cold side to 600°F on the sunny side. These high temperature differentials and their rapid changes cause severe expansion and contraction of the materials with resulting internal stresses conducive to possible distortion of the structure. These changes in temperature will take place in orbital flights while passing in and out of the planet's shadow. In interplanetary trips one side of the ship will overheat while the other will fall to very low temperatures creating severe structural problems, which may make it necessary to rotate the ship slowly.

The effects of high temperatures on materials are well known, causing considerable changes in organic materials and even in metals. For example, ordinary plastics and insulating materials on electrical wiring could not be used at a temperature just about, let us say, 100°C, because of softening, drying, vaporisation of solvents, or other changes that would take place under these conditions. In transistors and other electronic devices such as mercury batteries the best operating range of temperature is very limited. Transistors will work at lower temperatures but the energy supplied to them by the batteries will be considerably reduced.

Some problems which will affect the heat balance include the generation of heat internally from power plants and from electronic equipment. The isolating of the electronic package from the outer shell can be done by means of non-heat-conducting supports. The housing containing electronic equipment can be gold plated at the outside similarly to the surface of the protective shell, resulting in a minimum of radiative power transfer.

In fact, by a suitable choice of materials, normal temperatures can be obtained inside a space vessel. It is known that the equilibrium temperature of a body is a balance between the heat that it absorbs and the heat that it radiates. By controlling the emissivity and absorptivity of the surfaces, a desired temperature should be obtained. For example, the coat of silicon monoxide on the Vanguard satellite is transparent to visible light and thus permits the shiny aluminum surface to which it is coated to reflect this light back into space. But this coat looks black to the long infrared heat waves and since black bodies radiate well it permits the satellite to lose its internal heat by radiation.

High Vacuum

Another typical environment in space is that of very high vacuum. The gas density at 100 miles altitude is so low that the mean free path of molecules can be of the order of 100 feet. This condition produces very distressing effects such as the sublimation of materials of low vapor pressure, the vaporization of liquids, the removal of solvents from plastics, etc. Besides that, heat convection will be nil, vibrations will be dampened by internal friction only, i.e., more slowly than if the air was present, leakage through seals will be aggravated; galling and frictional problems between rubbing surfaces will be more severe without the "lubricating" adsorbed layer of air, and electrical phenomena in vacuum, such as corona discharge, will affect insulation problems.

Dissociated, Ionized, and Other Gases

At altitudes between atmosphere and the vacuum there will be an area where intermediate conditions exist. At 15 to 25 miles altitude ozone will form by ultraviolet energy. Ozone is very reactive with organic materials, besides being harmful to humans, and as it is stable and may persist for a long time in a space ship ways should be found to remove it. At 50 miles altitude oxygen and ozone begin to be dissociated into the atomic form by the sun's energy. At higher altitude the same happens to nitrogen. The effect of these gases would be mainly electrical and again would create insulation problems.

Meteors, Meteoroids, and Space Debris

The existence of meteors is well known but less was known of micrometeoric dust until measurements were made in satellites.

These tiny specks of high velocity dust can be detected in two ways: first a delicate microphone measures vibrations set up in the satellite skin when it is hit by a micrometeorite, the strength of the vibration being a measure of impact. Secondly, the other detector on the outside of the satellite is a set of grids wound with extremely fine wire. When one of the wires is hit by a particle more than 5 microns in diameter it will break and indicate the damage. Two of the Explorer's meteor detecting grids were broken very shortly after it started to orbit, and the micrometeorite microphone has detected many impacts against the satellite skin.

Preliminary measurements have revealed that 300 tons of meteoritic dust fall on earth daily, and the Russians feel that this quantity can be as high as 1,000,000 tons daily.

Micrometeorites create numerous problems. Besides the larger ones capable of perforating the skin of a pressurized cabin, with all the attendant effects, the very fine dust will with time erode the surfaces of satellites and space ships and remove the protective coating, consequently changing the heat balance until this comes to a dangerous point. The same eroding or sand blasting effect will take place on the windows through which the sun's rays can penetrate to the solar batteries. When the windows become cloudy the efficiency of the batteries will probably be reduced to a very low value. Other glass or optical surfaces and Geiger windows may have to be protected when not in use. As the size of the particles increases their number decreases and so does the probability of a satellite being hit by a meteorite large enough to destroy it completely. However what will happen when the skin of a pressurized vehicle is perforated by a meteorite is largely unknown. It is known that some materials are less sensitive than others to stress concentrations from notches or, in this case, cracks produced by perforation of the skin. It is possible that the skin material may have to be chosen on this basis so that, after meteoritic penetration, the failure may be located and repaired before a crack can propagate to cause a complete failure.

Collision of a space ship with large meteors or debris from destroyed space ships would most probably be fatal.

Zero Gravity

The effects of zero gravity are difficult to assess, as this condition on earth has been produced for only very short periods of time. The effects of zero gravity on materials are indirect in nature but very important. For example if a space station is rotated to produce a gravity force, the high internal stresses due to centrifugal load will affect the choice of material very considerably. In fact, centrifugal forces plus the forces from internal pressurization are the most important ones acting on a space station or satellite. The well known phenomenon of convection in liquids and solids which is based on differences of density or specific gravity will not take place under zero gravity. The rate of cooling and the efficiency of heat distribution will be reduced, and forced cooling may have to be resorted to.

Anti-Matter

Anti-particles of matter have been created in the laboratories and scientists think that such anti-matter could well exist in space. In particular, the scientists who invoke the laws of symmetry in nature have proposed that such other worlds of anti-matter balancing galaxies of ordinary matter in the universe probably exist. As anti-matter and matter would destroy each other as soon as they meet, no anti-matter exists on earth. A physicist has recently suggested one clue to the existence of anti-matter in space. In many meteoritic craters found on earth, no sign or remnant of meteoritic material has been found. Could such craters have been caused by anti-matter? This problem is far from being settled yet but if anti-matter does exist in the far distant space in the form of galaxies and in the near space in the form of meteorites, the latter create new hazards for space navigation. Means will have to be found to detect it from a safe distance to prevent space ships from impacting or soft landing on such cosmic bodies.

Atmospheric Exit and Re-entry on Planets

The most severe conditions met during space flight may perhaps exist during exit and re-entry of space ships in planetary atmospheres. The problem of aerodynamic heating is well known. The heat built up in the nose and skin during exit will soon be lost by radiation in space. But during re-entry the heat build-up will be more severe and a continuing problem.

The heating in the atmosphere will naturally depend on properties of this atmosphere as affected by its composition, pressure, ionization, etc. We are beginning to learn about the properties of our oxygen-nitrogen atmosphere. The conditions, however, should be very different on Venus, for example, which has a carbon dioxide-hydrogen atmosphere, or Mars which has a carbon dioxide, nitrogen and argon atmosphere but of pressure only 8 per cent of that on earth; or again Jupiter's which is made of hydrogen, methane and ammonia gases, thousands of miles deep. The re-entry velocities are also different on other planets because of their differing sizes.

The re-entry problem is slowly being solved for Earth. The total temperature reached during re-entry in a given atmosphere is dependent on the velocity which in turn is function of the shape of the nose cone. One approach is that of the heat-sink where a blunt nose cone is used. This bluntness creates a shielding shock wave ahead of the nose which reduces the velocity of the ship to subsonic speed. Instead of evaporating in high temperature re-entry heat, as a sharp-nosed warhead might, it descends at a cool 2,000°F temperature; it is made of high conductivity metal such as copper which very rapidly absorbs, spreads, and diffuses the heat whence the name heat-sink.

This type of nose cone unfortunately falls too slowly and might be vulnerable to attack by anti-missile missiles, so another approach known as the

ablating type of cone is used. Instead of absorbing and diffusing heat this cone removes it by ablation. The nose surface is made with materials which melt, vaporize or sublime while absorbing a great amount of heat, thus leaving the material underneath cool and undamaged.

Glass or quartz fibre reinforced plastic is a light material which is remarkably successful against short durations of extreme heat and is already used in many types of missile warheads.

However many other systems have been proposed to keep the nose cone of a missile cool. One of them is called magneto-hydrodynamic insulation whereby a strong magnetic field on the front surface of the nose would slow down the layer of conducting ionized air between the shock front and the surface of the nose, so that a slower, thicker moving layer will not transfer as much heat to the solid surface. The reduction of heat transfer would be 28 per cent. Greater reduction could be achieved by covering the nose with material that ionizes easily, making the slowly moving layer a better conducting plasma more effectively slowed down by magnetism.

The flights of the X-15 plane are the first manned flights approaching the complete empty space and atmospheric re-entry conditions. The whole system will be under zero gravity for about 5 minutes. Some parts of the structure during re-entry will reach 1,000°F, and consequently are made of Inconel (a heat resisting alloy that keeps its shape at 1,350°F when aluminum has melted and steel has softened). Considerable design problems were due to structural stresses caused by high temperature differentials during exit and re-entry, or to the effect of the attenuated air at high altitude on the forces acting on the vertical stabilizers. Wedge shape stabilizers were found to be more efficient than streamlined stabilizers under such conditions.

Changing the Environmental Conditions

Another approach might be to ease the materials problems by attempts to change these environments. It has been suggested for example during the last meeting of the American Physical Society that the radiation belts could be removed or changed to lower intensity levels if they prove to be too serious a hazard to space travel. This could be done by firing a few large size satellites in an equatorial orbit inside the radiation belts, the satellites being made of materials that would absorb the radiations. After a few months or years most particles would have been absorbed or have slowed down enough to leave the belt. It would take possibly 100 years for the belt to build up again to its present strength.

On the other hand the environmental conditions can be changed to our detriment. When a nuclear explosion happens in space as in the case of nuclear warhead anti-missile missile hitting a nuclear missile, the conditions will be very much different than when such an explosion takes place in the atmosphere. In the latter case, air absorbs gamma and ultraviolet rays and confines radioactive particles to a relatively small cloud. In space, however, the radiations will not be absorbed and they will cause damage to humans and electronic equipment in space ships and missiles miles away. Following the gamma radiation will come the beta and alpha particles, the neutrons and the gases of the ball of fire which will expand indefinitely in the vacuum of the space. Should future space ships be designed and protected for such occurrences? As this paper is being written news has just been received of such high altitude nuclear tests carried out by the U.S. months ago. It is certainly hoped that such explosions would be an effective defensive means against approaching missiles not only by the blast effect but by the effect of radiation on materials such as those used in electronic equipment. Another environment which changes is that of the cosmic ray belt. These radiations have been shown to vary considerably in relation with solar spots and should be studied at the proper time. A satellite travelling at the altitude of maximum intensity of these radiations could be dangerously affected.

Environments Put to Use

Against all the disadvantages of these unusual environments the genius of man is hard at work not only to develop materials that will withstand the severe conditions imposed but also to put these environments to use in space.

One first achievement is the transformation of solar radiation to electricity by means of the transistorized solar battery which already is in use in satellites and moon probes. A similar effect has been proposed for cooling space ship electronic components. If a voltage is applied to a circuit consisting of two dissimilar materials, heat is absorbed at one junction of the circuit and emitted at the other. Thus electricity from the solar batteries can be used to refrigerate infrared sensors or other electronic parts.

The absence of air in space would prevent any oxidation or corrosion of material. Therefore materials not normally used in our atmospheric conditions because of their susceptibility to oxidation could be used with advantage for other specific properties.

Another proposal to put a space environment to use is that of space travel by means of solar radiation pressure. Although the force of this radiation is very

small, of the order of 9 x 10^{-5} synes/sq. cm., it is thought that a sail of thin plastic covered with aluminum, if properly oriented, would accelerate and take an elliptical orbit around the earth until it is so far away that it would break loose from earth's gravity and enter a solar orbit. Such a satellite with a variable orbit would be most useful in that it would permit obtaining data at different distances from, and all around the earth, with the same satellite.

Conclusions

The design of extra-atmospheric vehicles presents problems of great challenge in the field of materials application and development. In fact because of these applications of materials under unusual conditions, the basis of design has departed from the adequacy of conventional mechanical tests to more sophisticated properties such as coefficient of thermal expansion, specific heat, thermal conductivity, melting temperature, emissivity, thermal diffusivity, high temperature vaporisation of low vapor pressure materials in vacuum, strength, resistance to abrasion, deterioration under radiations, etc., etc. And because of that, new specialized testing facilities had to be produced such as solar furnaces, plasma jets, shock tubes and tunnels to name but a few.

It is very gratifying to see that the recent developments of space technology provide man with new tools and opportunities for scientific observations that will add to our knowledge and understanding of the whole universe. The early stages of these new investigations of the cosmos have already started and, as we can see, they consist in determining the environmental conditions in space and their effects on man and on materials to allow us to build more suitable ships. Although the first space vehicles will be primarily used for meteorology, communication and reconnaissance around the earth, others will soon follow that will fill the same functions around other planets. In this ultimate achievement of the conquest of the universe man will try to take with him his familiar environments to protect him. But even this is not enough as his usual materials were not designed to withstand conditions in space. To accomplish his goal he will have to develop and produce better materials for his protection and it is likely that the next decades will see the development of materials especially tailored for space travel.

Is All-Out Thermonuclear War Conceivable?

COMMANDER B. C. THILLAYE

Commander B. C. Thillaye was born in France, educated in Belgium, and joined the French Navy in 1939. He escaped the fall of France to serve with the Royal Navy throughout the war. After leaving the R.N. in 1946, Commander Thillaye emigrated to Canada where he was commissioned in the R.C.N. He is a recent graduate of the R.C.A.F. Staff College and is now serving in a staff appointment at Naval Headquarters, Ottawa.

"THEREFORE, the Romans, observing disorders while yet remote, were always able to find a remedy, and never allowed them to increase in order to avoid war; for they knew that war is not to be avoided, and can be deferred only to the advantage of the other side . . ."

— THE PRINCE

Introduction

The advice, quoted above, which Machiavelli offered to his prince 446 years ago might still have found application at the time of the Korean War, for, in the early 1950's, an American atomic blow against the U.S.S.R. and Red China would have set back, and perhaps eliminated, the threat of Communist imperialism.

On 12 August, 1953, however, the Soviets detonated their first hydrogen device. Since then, their rapid amassing of nuclear strength has steadily eroded the Western Democracies' military superiority to the point where, temporarily at least, war no

longer seems a worthwhile projection of international policy and a "delicate balance of terror" prevails.

Nevertheless, it would be unwise to assume lightly that the injection of atomic and thermonuclear arms into the panoplies of the two principal contending champions has finally removed total and global war from the realm of human activities. For a conclusive answer to this assumption depends on an examination of the purpose of war, of the characteristics of the new weapons and the consequences of their use, and finally, of the supposed automaticity of the retaliatory policies adopted by the great powers.

The Purpose of War

Historically, war has been a means of coercing peoples, or individual wielders of power, into accepting by force of arms a set of conditions which they could not be cajoled or frightened into accepting by weight of words or din of threats.

With the passage of time, disappearance of mercenary armies and emergence of nationalism, war has tended to become less a matter of the whim of kings than a brutal way of maintaining for oneselves, or imposing on others, a national or ideological philosophy deemed essential to continued satisfactory existence.

And with the industrialization of nations, the weapons of war have increased their demands upon the state's resources — as well as their range and destructiveness — until war has become total in character and global in extent.

However until man's inventiveness and growing technology had made possible the release of the omnipotent energy encompassed within the atom, war had remained an instrument through which a nation's will could be projected beyond its borders or the integrity of its ideals or the furtherance of its interests.

With high explosives as the greatest source of destructive power, the scale of war casualties — although fearfully large — could still be kept within limits. Under these conditions, war was not "suicide for fear of death" and could still be substituted for diplomatic inadequacy when the issues at stake were deemed sufficiently grave to justify resort to arms.

Wars fought with high explosives could be followed by peace in which international balance could be re-established and man's interrupted progress resumed.

The invention of atomic and thermonuclear weapons, however, has radically altered the nature and aftermath of war, and has introduced gnawing doubts in the minds of the policy-makers and their military executives as to the practicability of nuclear conflict as a way of solving international disputes.

For the purpose of military action, heretofore, had been to achieve a vital national objective when all else had failed, and "only if the price to be paid appears commensurate to the value of the objective sought does war make sense as a servant of politics" (Sokol).

On that basis, can there be any political justification for initiating an exchange of megaton weapons in defence of ideals when the price to be paid might be the destruction of the society which holds these same ideals vital? Such a strategy does, indeed, hold an element of grim paradox, and if a global thermonuclear conflict does doom both contestants to death, one is forced to agree with Sir Winston Churchill that "when the advance of destructive weapons enables everyone to kill everybody else, nobody will want to kill anyone at all".

Furthermore, victory in war has never been an end in itself but only the necessary prologue of a peace to come. If an all-out war can only leave in its wake a radioactive desert strewn with irradiated corpses, then war has ceased to be a rational and profitable act, and even a paranoiac like Hitler would pause before unleashing it.

But would this, in fact, be the result of a general thermonuclear conflict? Would aggressor as well as victim be condemned to destruction? Would the unrestricted application of atomic fusion and fission to destructive ends really bring about Pope's apocalyptic vision:

"Then rose the seed of Chaos and of Night
To blot out order and extinguish light"?

To find an answer to this — the most disquieting question of our time — we must turn now to a brief assessment of the effects and consequences of nuclear and thermonuclear weapons.

Effects and Consequences of Nuclear and Thermonuclear Weapons

It has been said that when one of the officers who flew in the atomic raid on Nagasaki learned of the consequences of the deed to which he had been a party, he entered a monastery: the better to repent and meditate over the foolishness of man. And yet other conventional aerial raids had previously caused more casualties than the nuclear attacks on the Japanese cities. What awesome new vista had been revealed to that American officer to impel him to spend the balance of his days in atonement?

The first new characteristic of nuclear weapons is the stupendous destruction wrought almost instantaneously by the blast and thermal flash which they generate.

The second new feature associated with the release of atomic energy is radiation, both immediate and localized, and delayed and remote, with its direct and hereditary consequences upon all forms of life.

Figures help to describe – albeit inadequately – the magnitude of the danger inherent in the new devices of destruction. Thus the crude, 20 kiloton atomic canister which exploded over Hiroshima on 6 August, 1945, killed or injured about 130,000 people and razed 75% of that city's dwellings. The Hiroshima weapon contained more than 2,000 times the blast power of the British "Grand Slam" – the largest HE bomb in the 1939-45 war – but the atomic bomb caused as much damage in a fraction of time as would 4,000 planes, each carrying a 5-ton HE bomb, in several hours.

There, indeed, was a weapon to stun the imagination and yet, in less than eight years, it was to be dwarfed by another, immeasurably more devastating: the hydrogen bomb.

One 5-megaton H-bomb contains three-and-one-half times the total explosive power dropped on Germany during the whole of the Nazi war. Today, a single aircraft carrying such a weapon possesses a force of devastation equivalent to that of one million airplanes, each carrying a 10,000-pound T.N.T. bomb, and that same lone aircraft could annihilate one million people or more and volatilize an entire metropolis.

And not only is there no theoretical upper limit to the size of hydrogen bombs but, in addition, there is no absolute restriction to the numbers of such weapons which could be manufactured.

There seems little doubt that thermonuclear weapons could blot out urban society through their explosive and heat effects alone and, in that way, set back civilization by years.

Any hesitation as to the acceptance of this statement is dispelled by authoritative statements. Thus, a senior SAC officer recently admitted that, in spite of precautions being taken to avoid unnecessary civilian casualties, SAC's first attacking wave would kill roughly 50 million Russians.

These few examples should serve to illustrate the enormous destructive potential embodied within nuclear and hydrogen weapons as a result of their blast and thermal effects alone, and without taking into account the consequences of the radiations emitted by these weapons.

The melancholy conclusion thus far reached is that "clean" nuclear weapons, if dropped in sufficient quantities on an advanced, industrialized and urbanized country, would wipe out the substance of its metropolitan civilization.

Let us now consider the effects and consequences of nuclear radiations.

Unlike the effects of blast and heat, which although superlative, are nevertheless limited in time and space, the invisible beams of radioactivity not only contaminate and kill within the area surrounding the epicentre, but are carried afar by the upper atmospheric winds, and decay at a rate prescribed by their own irrevocable timetable.

A dose of 350 roentgens will kill 50% of humans who acquire it. After the Bikini test, a level of 2,300 r was recorded for 36 hours at a point 1,000 miles away from ground zero, and fall-out covered 7,000 square miles.

The sombre fact evidenced by that test was that it would have brought death to most unprotected beings within an elliptical area 140 miles in length and 20 miles in width.

Other calculations indicate that a 30-megaton H-bomb would deposit a radioactive mantle of poisonous debris over 14,000 square miles to leeward of the explosion. This is an area equivalent to that of Massachussetts, Rhode Island and Connecticut.

Studies of fall-out persistence made after the explosion of a 15-megaton device at Bikini revealed that the total exposure accumulated in the area amounted to 2,750 r for the first week, 3,320 r for the first month and a total of 300 r for 3rd, 4th, 5th and 6th months.

When one recalls the lethal dose, these persistence figures tell their own grim story.

Another study destroys any optimism concerning the possible use of small-yield nuclear weapons as far as accompanying radioactivity is concerned. This study indicates that although megaton weapons poison through fall-out proportionately greater surfaces than atomic weapons, the latter produce roughly 100 times more fall-out radioactivity than high-yield weapons. This apparently paradoxical fact is caused by the greater power of the hydrogen bombs which blow most of their fissionable products into the stratosphere, whence it takes them longer to descend to earth than it takes debris from atomic bombs which do not reach above the troposphere, and thus settle more rapidly and retain more intensity.

In addition to causing death by immediate impalement on the unseen beams of fission, the new weapons have delayed consequences which have hideous qualities of their own.

Thus, it was observed that some Hiroshima children born after exposure "in utero" to radiations

showed serious anomalies: seven out of eleven such children studied exhibited small crania and mental retardation by the age of 4½, and also suffered retardation in height, weight and skeletal development.

It has long been known that exposure to radiations brought about genetical changes in man, animals and plants. In spite of the difficulty of carrying out genetical experiments with human beings (whose rate of growth is slow and who object to having their mating clinically regulated) recent studies of the long-term genetical effects of radiation-induced mutations have yielded the following conclusions (Dr. O. M. Solandt):

> The frequency of induced mutations is directly proportional to the dosage of radiation.
> The effects of successive exposure are cumulative and permanent in the descendants of the affected genes: there is no recovery.
> The overwhelming majority of induced mutations is deleterious.

There is thus no escape from the stark fact that the detonation of "dirty" nuclear weapons invariably results in the appearance of defective individuals. What is not yet known is just how many such unfortunates are produced for a given nuclear explosion.

Most of the radioactivity generated by a nuclear explosion dissipates within a few hours, but the remainder continues for weeks and even years. Thus Schubert and Lapp state in their recent book "Radiation" that many "local" areas would "take five years to reach the safe occupational level of 300 milliroengten per week".

There remains a final point to be discussed, namely: to what extent would an aggressor's own territory be contaminated by his own weapons delivered, perhaps thousands of miles away from his own borders?

This is, as yet, an unresolved problem. Its solution depends on an exact knowledge of the paths of upper air currents and on their global distribution, and this knowledge is not yet present. What is known, however, is that certain fission products remain lethal for years and that, sooner or later, they are deposited somewhere on the earth's surface. Strontium 90, for instance, has a half-life of 28 years. Ingested in the form of irradiated vegetables, meat or milk, this element causes bone cancer and leukemia. Schubert and Lapp calculated that the explosion of 1,000 ten-magaton weapons would induce a harmful bone-retention of 10 microcurie of Strontium 90 per head, but stated that this assumed a uniform global fall-out pattern.

A categorical answer to the question which forms the subject of this essay depends largely on whether an aggressor can escape the consequences to himself of launching a massive thermonuclear attack upon an enemy armed with hydrogen weapons. Part of this answer lies in determining whether fall-out from thermonuclear bombs is globally distributed, and on what is the extent to which the natural radiation background can be safely increased. To neither of these questions has modern science found a decisive answer, and some of our most eminent scholars disagree on this vital point. Thus, Professor Haddow, head of the Department of Pathology of the University of London, writes that although it is not known pragmatically that the explosion of x thermonuclear bombs will spell the end of the human race, he believes that it would probably do so, and that only a lunatic would require the matter to be demonstrated by being put to the test. However, Dr. Solandt, a former head of the Defence Research Board, finds it hard to support scientifically that a general thermonuclear conflict would doom humanity, but concedes that it would probably set civilization back from 10 to 100 years.

The question which now remains to be answered is: whose civilization? In other words, assuming that an aggressor's own bombs do not toll the bell for his own people through the effects of long-range, delayed fall-out, what are the conditions under which he might launch a global war and still profit by his action?

To answer this final question, we must now investigate the supposed automaticity of the retaliatory policies adopted by the U.S.A. and the U.S.S.R.

Automaticity of the Deterrent

The spectre of thermonuclear war has stood poised, like the scythe of the Revelations, over the camp of the East and the camp of the West since both sides acquired the reciprocal capability of atomizing one another.

This state of affairs has given rise to such expressions as "nuclear stalemate", "atomic parity" and "there can be no victor in an atomic war". And yet can it be safely assumed, in a world of such swiftly changing technology and advancing science, that the "delicate balance of terror" upon which depends the power to deter is permanent and can be taken for granted?

To the writer, this belief is a dangerous compound of wishful thinking and delusion. Deterrence is not automatic but rests on definite conditions.

An enemy will only fear retaliation if he is certain that his opponent will unhesitatingly strike back, and if he is convinced that the opposite side's retalia-

tory force will, in fact, survive an all-out strike. For it must be remembered that the power to deter is proportionate to the power to strike second in such force as to inflict upon the aggressor damage beyond a scale which he may be prepared to accept.

If both sides have well-protected strategic forces and neither can escape the consequences of a deliberate attack against the other, a stable situation exists and thermonuclear war becomes an irrational act of national suicide. In this case, and under conditions of clashing international interests, resort must be had to other dynamic forms of action to achieve national objectives, such as political, psychological and economic warfare.

Conversely, if either side can annihilate the other by striking first, a precarious, unstable situation exists, not unlike the old-fashioned Western gun duel: one side cannot afford not to shoot first!

A third possibility may occur in which one side's retaliatory force may be temporarily vulnerable to a surprise blow. In this case, if the side which has the momentary advantage happens to be thwarted by the other in its essential interests, an act of war again becomes rational provided the pre-emptive blow destroys enough of the enemy's might to make the weight of his counter-attack acceptable in terms of the political, national or ideological objectives.

Thus, if the U.S.S.R. should obtain a definite lead in ICBM's over the Western coalition, and possess enough long-range rockets to blast most of NATO's retaliatory armoury at a time when she was, say, losing or about to lose a satellite, or a vital area such as Berlin with a possible consequent loss through revolution of peripheral defensive areas; or, if the Soviets feared that their own temporary ICBM superiority coupled with their avowed imperialistic designs might lead the West to strike a pre-emptive, desperate blow, the Kremlin might decide to launch a maximum thermonuclear strike against the Democracies.

Against the argument that some of the British-American retaliatory elements would escape the attack and manage to drop their weapons on Russian territory should be opposed the Soviet's record during the Second World War. In that conflict, the Russian leader had no hesitation to order a scorched-earth policy and to sacrifice enormous numbers of troops to gain time and space, and some 20 million Russians lost their lives in execution of their dictator's orders.

Furthermore, it must be remembered that civil defence measures carried out by a disciplined people in possession of the strategic initiative would considerably reduce casualties inflicted by a weakened enemy retaliatory force, to a degree which a ruthless directing body might not consider incommensurate with its aim.

In this connection, Wohlsteller writes in the January 1959 issue of Foreign Affairs that, whereas 5 half-megaton weapons dropped with a CEP of 2 miles on an unprepared city of 900,000 people would kill about half of them, 60 such weapons would be required to cause similar casualties on a prepared built-up area in which shelters designed to stand up to 100 lbs.-over-pressure were available.

In addition, sheltering also reduces casualty rates from radiation and fall-out. Thus sheltering in basements gives a protection factor varying from 10 to 100, and concealment in especially constructed shelters, such as the Katarina shelter in Stockholm, reduces radiation hazards 10,000 times.

And, finally, the disposal of genetically defective individuals should present no insurmountable problem to the Russian Communist Party: after all, the present head of the party did not hesitate to starve several million Ukrainians to death to enforce the collectivization programme in the early 1930's.

Conclusion

The foregoing discussion has illustrated the cataclysmic dangers inherent in the unleashing of a global, thermonuclear war, but does not prove that the new weapons have finally ostracized global war as a means of ultimate political action.

To a determined, ruthless and fanatical leadership in the Russian dictatorial state, certain conditions may appear under which a thermonuclear war might seem profitable. These conditions have been discussed, and it may be apt, in closing to recall Lenin's statement that he did not care if he lost 90% of the party members, provided 10% dedicated Communists remained to carry on.



Perspective on War

CAPTAIN R. H. MURPHY

Captain R. H. Murphy, 30, received his B.A. at the University of British Columbia in 1949, and the same year was commissioned in the Regular Army. He has served in Japan and Korea, as well as in many parts of Canada, and has just completed a three-year tour at Army Headquarters, Ottawa. Captain Murphy is now a student at the Canadian Army Staff College at Kingston, Ontario.

THE DEVELOPMENT of military doctrine has become increasingly entwined with scientific progress, particularly during the past twenty years. At the same time the accumulation of all knowledge, including military and scientific, has been unprecedented. The rapidity of increase has been so marked in recent years that it can be safely said that for a man fifty years old nearly everything that is now known was not taught during his school days; what he does know he has learned as he went along.

We have all become, as a result, specialists of one kind or another because no man today can even begin to be an expert on all matters, as the well educated may have been in the past. This inevitable specialization has been compounded in the military sphere by the demands of secrecy — the "need-to-know" basis. One obvious result is that the non-specialist, and in military affairs this now includes most if not all civilians, is ignorant of current military realities. This situation has come about at a time of phenomenal change in military doctrine and when the need for objective reporting and comment has never been greater. The problem has been complicated by the military itself. The specialization that has taken place in the armed forces has tended to narrow the outlook of many servicemen and in their public utterances they have tended to expand on their particular service or branch to the exclusion of all others. This has also affected the civilian writers who have frequently become apologists for one or another particular service. These conflicting views not only bewilder the average citizen, they also bedevil the servicemen whose knowledge in many cases is confined to his own trade or to his own service. It is for these reasons that it appears worthwhile for a serving officer to attempt to find a perspective on modern military events and, from the Canadian point of view, on war.

One of the chief things that tends to obscure real issues in Canada is the question of nuclear weapons. Although we are not one of the three nuclear powers we are inextricably involved with them in matters of nuclear doctrine. Our two principal allies are nuclear powers as is our major potential enemy. We are committed inevitably by political and cultural ties and by our geographical location to involvement in any world war which might occur in the foreseeable future. A retreat to neutralism and abandonment of our international alliances is politically unlikely, would be militarily and economically disastrous, and would drastically reduce Canada's international status. Whether or not our own armed forces are equipped with nuclear weapons, the use of such weapons by the other powers must affect us.

Few will deny that the abolition of all nuclear weapons everywhere is a good aim, but such an accomplishment is difficult in the extreme and not too likely in the near future. Even if such weapons are banned man's knowledge of their construction will not pass from this earth. The invention of the nuclear bomb cannot be undone. And even if it were there is no reason to suppose that an even more deadly weapon might not replace it. Some "ban the bomb" advocates are worthy in their desires, but they are fated to failure as most utopians have been before them. Nevertheless the neutralists and "ban the bomb" advocates are constantly being exhorted indirectly and directly by communist propaganda, and thus their impractical fervor helps to confuse an already muddled situation.

The next bewildering problem is more sophisticated. It has been suggested that the use of large yield nuclear weapons is too devastating to both sides in the event of all out nuclear war. The argument then follows that the existence of these weapons has cancelled out the likelihood of war. Both sides will be, so to speak, paralysed by fear. This argument is similar to the frequently expressed view of the 1920's that war was impossible because of the deterrent effect of gas. This period was followed by the wave of pacifism that swept many countries including our own during the 1930's.

It cannot be reasonably refuted that the existence of nuclear weapons on the side of the defender tends to deter any potential aggressors from launching war. When effective nuclear deterrents exist on both sides the likelihood of their use is even more reduced. Controversy rages over the amount of deterrence required for safety, but as the principal Western deterrence is held by the United States, Canadians have become only indirectly involved in these arguments and whether the Western deterrent is in the form of missiles, land-based aircraft, submarines or carrier-based aircraft is of less importance to us at this time than certain other aspects of deterrence such as civil defence and air defence which may be discussed, perhaps, by Canadians with some authority.

It seems clear that our defence policy insofar as the Soviet Union is concerned, for we have no other likely formidable enemies, is based on the hope that the United States and British nuclear deterrent will in fact prevent the outbreak of all-out war. This policy has been successful so far and it probably will continue to be effective. However, it is, unfortunately, not completely certain, and the possibility of accident or political or military miscalculation will always remain. The possibility of a very rapid technological advance that might produce a disproportionate balance in the deterrence — for instance an effective missile defence system — cannot be overlooked. The development in the Soviet Union of an array of weapons sufficiently advanced to neutralize the Western retaliatory forces, while unlikely, seems possible. Such an advantage might be short lived and aggressive leader might chance immediate war knowing it to be to their benefit. Nevertheless, such an event seems improbable and only likely to come about as the result of a relaxation of defence efforts on the part of the West.

It must also be noted that the more sanguine exponents of all-out nuclear war are not necessarily correct in their assumption that a nation such as the United States or the Soviet Union could be utterly destroyed in one sudden attack. The primacy of the offensive is still valid vis-à-vis the defensive, but the development of defensive measures against nuclear attack have been under way for some time and a measure of protection against nuclear missile bombardment may become possible. Certainly now, as the missile age is just commencing, antagonists might wreak havoc on one another, but in large countries by no means all the population would be killed. Recent studies in the United States indicate that even under intense bombardment a large percentage of the population not directly under a bomb could survive, particularly if food was pre-stocked and attention was previously paid to a shelter programme. The bogey of an all consuming radiation cloud has been, generally, dispelled. Certainly our way of life might be drastically altered, but, while certain small countries like the United Kingdom might indeed be destroyed, many millions of people in other countries would most certainly survive. It is relevant to recall that the Soviet Union lost between 20 and 30 million persons in the Second World War and, as events have proved, hardly missed them.

The psychological effect of sustaining 100 million or more casualties in one day is impossible to estimate but there is no assurance that such a blow would be decisive so long as both sides suffered significant damage. The ability to survive, then, is a major aspect of nuclear war and of the deterrence to war. On one hand a nation completely equipped to go underground, with only a few retaliatory weapons, would have a tremendous advantage over a nation equipped with many nuclear weapons but with no shelters. On the other hand each degree of civil preparedness is a step towards such an attitude of defence and must be considered by any attacker. Further, the degree of our own survival capability may affect our own resolution in using our nuclear deterrent in the event of an enemy threat to, say, an isolated ally, or even to ourselves. The Canadian Armed Forces, therefore, insofar as they are involved in civil defence have a most important role and this role is really an aspect of nuclear deterrence.

The third aspect of deterrence is defensive and by the nature of modern technology this defence must be varied and complex.

The means by which nuclear warheads may be delivered today are primarily manned aircraft and land-based long range missiles. Submarine-launched missiles will shortly be added to the list and, slightly lesser in importance, tactical forces with short range missiles may also be considered as forming part of the deterrent. The nation that can neutralize these means is immediately free of the fear of retaliation. Complete and perfect defence may be unobtainable but to the extent that defences are effective so is reduced the effectiveness of the opposing side's deterrence. Against Canada and the United States the direct nuclear threat has been limited in the past to manned aircraft. As a result, one of Canada's first defence priorities has been defence against bombers. The radar warning lines and NORAD have been two outstanding manifestations of our concern. The effectiveness of our air defences has not been tested but the very existence of defences

in the form of fighter aircraft, and missiles (so far only in the United States), introduced uncertainties into the planning of any attack against us. These uncertainties make it necessary for any attacker to employ large numbers of aircraft to ensure achievement of his aim. Our defence efforts plus possible economic considerations and the successful firing of test missiles have led the U.S.S.R. to emphasize missiles. At any rate Canada has been able to slightly change its emphasis in regard to air defence. The Soviet air force however has not ceased to exist and so long as any remains, which is likely for an indefinite period, then the services involved in air defence will have an important role. This defence will probably be added to or reduced in relation to the strength and quality of the potential enemy's aircraft. Whether or not missiles or aircraft dominate our defensive effort is, therefore, a relatively minor aspect of the overall situation. There will be a role for both in the foreseeable future and the actual equipments used will depend on technological and economic developments as they affect potential antagonists.

The development of long range missiles has been spurred on by the fact that no effective defence against them now exists. Hence the ICBM is an admirable weapon for deterrence. It is nevertheless an extremely costly weapon, it is subject to malfunction and it is not always accurate. Other than the cost, however, these problems are likely to be surmounted within the immediate future. The defence has lagged behind the threat but is probably not too far behind and the introduction of anti-missile missiles will surely take place during the 1960's. At first the defence may be weak but each improvement will increase the uncertainty of the effectiveness of an attack and hence continue to prevent war. Actually a sudden nuclear missile attack would likely attempt to destroy the opposing side's retaliatory forces. The widespread deployment of our ally's forces (for example duplicate airbases for the United States Strategic Air Command including some in Canada) and the construction of underground sites for United States missiles are, therefore, defensive measures possible in North America at this time. As missile defences become feasible the Canadian Armed Forces may find themselves actively engaged in the employment of anti-missile devices.

By the mid-1960's, the ICBMs will have achieved a high degree of development and, possibly, some form of ICBM defence may have appeared. The missile launching submarines should, too, by that time be operational in some strength. There will be no advantage in mastering the land-launched missiles if submarines are able to bombard at will. Anti-ICBM defences may also be effective against sea-launched missiles but, regardless of this, there will remain an important defence role for the anti-submarine forces of both the R.C.A.F. and R.C.N. This is not quite the same as keeping the sea lanes open to Europe but it is still of question of destroying submarines, a task on which our maritime forces have been concentrating for some time.

All the foregoing has been in regard to our position in North America. It is by far the front of most consequence and the armed forces serving in Canada, while they may appear the least important in comparison with the forces serving overseas, are engaged in the more vital role, and this role in the broad sense is connected with prevention of war. Their success together with the success of the striking forces of the United States can only be measured in terms of peace.

In the final analysis all-out nuclear war would be a show-down between North America and the Soviet bloc. The European countries individually or collectively could not resist a Soviet nuclear attack without United States support. The solidarity of NATO accrues from this fact. Without the nuclear deterrent described above any nation is subject to what has been frequently described as nuclear blackmail; the mere threat of attack may destroy all will to resist.

The maintenance of freedom as we know it is undoubtedly the overall aim of all Western nations and the collapse of any free country anywhere is in effect a reduction of freedom in the world. Further, the economic and cultural life of Western Europe and in particular the NATO countries is increasingly more entwined with our own. It is, then, in our interest to consider other countries as important to our future well-being. Our participation in NATO is a concrete expression of this belief. NATO is a political alliance but the mutual defence aspects of the organization are significant. NATO was conceived before the Soviet nuclear threat was of much importance and the original military aspects have therefore changed. Indeed, the development of the ICBM has possibly reduced the military importance of Europe to us, but it has not reduced the importance of freedom in Europe. The fortress America theory is out-of-date and a policy espousing abandonment of the rest of the world has too many long-range defects to be considered seriously.

We are committed then to deterring war in Europe. This can be done, it has been said, without having armed forces in Europe at all. The disarmament of the United Kingdom, for instance, would reduce the Western deterrent to war only slightly.

It would of course not be to Britain's advantage nor to ours. The maintenance of armed forces by European countries is an expression of their willingness to resist aggression. Their forces, however slight, add to the overall deterrent and thus assist the common cause of preventing war.

Actually the strategic situation of Western Europe is a special case and deserves analysis. If we accept that in all-out nuclear war the vital Western area is North America, then Europe is seen to be one of many lesser battle zones. It will remain the most important of these lesser zones, however, because of the relative importance of its position as the balance between East and West and because of our special ties with the area.

Western Europe's close proximity to the potential aggressor makes it particularly vulnerable. It seems valid, indeed, to conclude that nuclear war would be initially more disastrous to Europe than to North America. It is surely within the capability of the U.S.S.R. to completely disrupt if not destroy the framework of existence in Western Europe within a matter of hours unless an extensive digging-in is commenced for vital services or more adequate defences developed. This implies no criticism of the NATO commanders in Europe; their aim has been primarily one of early warning and deterrence. In the foreseeable future, then, a nuclear war in Europe (and it matters little whether it is all-out or limited) would destroy much of the civilian base of the countries involved and leave the surviving military forces surrounded by chaos. It is not certain whether or not the NATO territory would actually be overrun by Soviet troops but even if not the NATO forces situation would be critical. Food would be destroyed or contaminated, ports disintegrated and production facilities widely ruined. Only small forces could be maintained and their logistics might become a matter almost entirely of scavenging and of air supply, which might have to come from a battered North America. The mounting of any "large scale" ground operations under these conditions would be unrealistic. That there will be a role for air and ground forces is unquestionable, but the scale and form of this role will bear little or no similarity to what pertained in previous European wars.

If this seems overly sanguine, consider the alternatives: either no war, or surrender.

Words are cheap, but our stationing of Canadian Armed Forces in Europe is a concrete expression of our aim, and is an assurance that Canada will not abandon its European allies in the face of any kind of threat. For this reason the form of our NATO contribution is less important than the fact that some forces are in Europe. The form of these forces, either ground forces, missiles, aircraft or ships or any combination of these may and probably will undergo alteration from time to time. From the military point of view our contribution will always be slight especially in comparison with that of our major allies, but from the political point of view our participation is a symbol of national maturity.

This discussion so far has endeavoured to indicate the importance of our contribution to the various aspects of deterrence from all-out nuclear war. The scope of deterrence is so broad that almost any military effort we can provide is of value to the common pool of allied resources. In view of the size of our nation we should not expect to be involved in every aspect. Further, to suggest that by not participating in all phases of massive deterrence, in particular in not having ICBMs, we have abandoned freedom of action and lost national integrity is to deny the magnitude of the potential threat, the experience of history and the interdependence of nations in this age. If any criticism can be legitimately levied it is in the realm of the size of our contribution, but this is largely a matter of economics and opinion, and beyond the scope of this discussion.

Deterrence as I have described it will probably prevent major war for the foreseeable future. The greater our effort the more probable will be peace. But if accident, miscalculation or other unforeseen event does bring about all-out nuclear war, what then? There would be two phases, at least, to such a war. First would be the nuclear bombardment. The relative brevity of this phase limits our participation to forces in being. The air and naval forces would be on the defensive, and the ground forces, together with the entire population, would be primarily engaged in survival. Our forces in Europe would have failed in their purpose but would add their weight to the general cause of bleeding the enemy.

Following the nuclear exchange would come phase two, which has been called the broken-back war. It is well nigh impossible to conceive of the outbreak of all-out nuclear war unless the initiator has some expectation of success. For this reason it is difficult to foresee such a war without vast damage to ourselves at home and abroad. We cannot, therefore, expect our nuclear bombardment to automatically result in the surrender of our enemies. Would, for instance, the U.S.S.R. collapse if it knew that 100 million or more casualties had been inflicted on the West and that the governments of every country in Europe were destroyed or seriously disrupted?

Possibly, but not necessarily! It would appear that our armed forces have a role in planning for what might happen during phase two of all-out nuclear war. Survival and reconstruction would be paramount. There may very well remain the task of mopping up the oceans, clearing occupying forces out of peripheral areas and imposing our will upon the enemy. At the present time it does not seem assured that this could be done by only one service but rather that every aspect of armed force might be required. A definite Canadian Armed Forces task, then, is to be prepared in some degree for the eventualities of broken-back war.

All the foregoing has been related to the problem of all-out nuclear war but is this the only war possibility? Obviously it is not. Indeed some military apologists, notably for the Marines, Army and Navy, have suggested that as all-out nuclear war is unlikely it follows that limited wars are the most likely form of warfare to be encountered. Much of the controversy hinges on the various definitions of limited war. Generally it can be said that limited war includes any fighting that is less than total in either weapons used or in area covered. The Second World War was in a sense a limited war because gas was not used. But more properly within the definition of limited war may be included the Mau Mau campaign in Kenya, the Suez incident and what Canadians call the Korean police action. This latter is the type of conflict which best suggests limited war as envisaged in the future.

The need to be prepared for such wars is particularly important to countries like France, Britain and the United States that have extensive colonial or treaty obligations around the world. Canada does to a lesser extent and our participation, as it has been in the past, will likely be within the framework of United Nations or, less likely, NATO action. Canada does have forces available at a high level of readiness to participate with other nations in such actions. These forces are small and could be larger only at the expense of our other commitments. The likely nature of these limited wars calls for the time being at any rate for first-class non-nuclear naval, ground and air forces. Success in police actions may have a direct bearing on our overall aims of world peace and freedom.

Between the poles of police actions and all-out nuclear war there are various graduations of intensity of conflict. Two main possibilities may be considered. One is a widespread non-nuclear war; a war that might cover much of the globe but be limited to non-nuclear weapons. Such a conflict is of particular interest to Europe where Western non-nuclear forces are vastly outnumbered. The possibility of such a war in Europe cannot be entirely dismissed but all of the announced defence policy of the West would have to be abandoned to allow such a war to take place. Such a war could at best result in a stalemate. It is inconceivable, however, that the major powers would not use nuclear weapons once their vital interests were threatened. We should be aware that Western Europe has been declared of vital interest to us and our allies. Generally the acceptance of non-nuclear war in other than a limited area would be disastrous to our cause and is therefore most unlikely.

The other possible type of limited war is a nuclear war limited in area. This situation does not require limits on weapons so long as all the explosions take place within certain geographical limits. Such a war might commence as a police action, tactical nuclear weapons might then be introduced. The achievement of victory by either side might be difficult because once nuclear weapons were employed it would be almost impossible to limit the yields. If both sides were determined, the area involved would be devastated to a degree beyond human habitation. Consider Korea as being the scene of such a war. If the geographical limits which pertained in 1950-53 were respected, both sides might employ missiles based outside Korea, just as they previously employed aircraft stationed in Manchuria and Japan. The ICBM might very well be employed by both sides and Korea would quickly be reduced to a barren no man's land – a result surely unsatisfactory to the antagonists. Nevertheless limits to nuclear weapons might be achieved; but the unlikelihood of such a war must surely make it unnecessary for the Canadian Armed Forces to be greatly concerned, at least until such time as nuclear weapons become the common property of many more nations.

In summary then it can be said that modern war is extremely complex, and that Canada's part in it is important. Of the possible military problems facing us the prevention of war is the most important. There is more than one face to deterrence and even though we are not involved in the maintenance of retaliatory fire power we are able to effectively contribute in the fields of air and sea defence and in survival. To the extent that our efforts, together with those of our allies, are successful so will continue peace. However, in the event of failure the Armed Forces must be prepared to continue any wars to a successful conclusion. War except for minor police actions will very likely be nuclear war and the Armed Forces have a vital role in being prepared for such a war regardless of the undoubtedly vast dam-

age which will have been done both to Canada and to our allies. It is probably true that limited wars are more likely than all-out nuclear war and that many of these limited wars, mostly in the form of police actions, will be important to the overall maintenance of world peace and stability. Nevertheless the various aspects of deterrence of all-out nuclear war must remain our prime task.

A Comparison of Nineteenth and Twentieth Century Balance of Power

LIEUTENANT COMMANDER J. W. B. BUCKINGHAM

Lieutenant Commander J. W. Buckingham, 40, enlisted in the R.C.N. as a boy seaman in 1938, and was promoted to commissioned rank in 1944. The most recent of his many sea appointments was as Commanding Officer of the frigate H.M.C.S. New Glasgow. He is presently serving as Deputy Director of Service Conditions and Welfare at Naval Headquarters, Ottawa.

THE HISTORY of international relations and its predominant feature, the balance of power, has, since the first quarter of the nineteenth century, passed through three unique but related phases. The initial phase of this history dates from the Congress of Vienna in 1815, and came to a close with the outbreak of the First World War. The second phase occupied the period between World Wars, while the third phase covers the fourteen years following the Second World War.

For the purpose of this essay, the three phases of international relations were selected on the basis of their similarity. This similarity is discernible in the international reaction and adjustments made in response to the conditions which existed during each period. Although some of the political, cultural and economic conditions which motivated international reaction and adjustment were peculiar to the periods selected, it is significant that the reaction in each case followed a repetitious pattern. Since 1815 the pattern has been somewhat cyclic, and comprised in the order of their appearance on the international scene, a balance of power system, war, collective security, and a reversion to the balance of power.

It is the aim of this essay to examine and compare in three phases the major factors which contributed to the recurrence of the balance of power system.

Following the defeat of Napoleon and the collapse of his European system, a need arose among the most powerful of European states to establish some form of international order. In addition, it was essential that the European status quo be re-established and re-defined. The balance of power system grew out of this general European requirement for international stability.

What were the implications of the balance of power and what were its principal constituents? International jurists have defined it as a system of balancing power differentials between states. This definition presupposed a group of the most predominant sovereign states, called the international oligarchy, which were equal in power. The status quo among the great powers, and in Europe generally, depended upon this power equality. When an imbalance occurred, international adjustments through the medium of a balancer, or reciprocal adjustments within the oligarchy, brought the system back into equalibrium.[1]

Dr. F. L. Schuman has stated that:

> "The Western state system has developed in such a fashion that no one of its members possesses at any time sufficient power to extend its control over all the others. In the interests of self-defence, the members tend to combine against any one which is a potential menace to all. Invariably the pretender to world power is repressed by a coalition of the prospective victims. Each power thus retains its independence and the state system is preserved."[2]

The balance of power system, which was exemplified in the Holy Alliance and later in Bismarck's complex system of alliances, was instrumental in the preservation of the great powers.

Although the balance of power system tended to guarantee the independence of the European great powers, it was too rigid and inadequate to meet changing international conditions. The whole system was subject to a moral climate, the restraint of great powers, and the self discipline of small powers.[3]

The balance system was not completely ineffective. During the period from 1815 until 1914 several equitable and reasonable international adjustments were made. The Congress of Berlin in 1878 and Algeciras in 1906 are successes attributable to the balance system.

One of the principal constituents of the balance of power system was its international organization. There were no established organizational structures with permanent councils and secretariats; nevertheless a very loose arrangement called the Concert of Europe was used.

The concert of the great powers was more or less a "habit of consultation" which was invoked whenever the interests of the major nations were involved.[4]

There was no continuity or pattern to the frequency of international congresses under the concert system; therefore, the system as a whole tended to be unreliable. However, the idea was novel in its application to international negotiation, and was generally accepted by the great powers as a means to an end.

The Concert of Europe, during the period between 1815 and 1825, considered many international problems, and under the auspices of the Holy Alliance and the Quadruple Alliance it achieved a great deal of success. One of the Concert's major successes was achieved at the Congress of Paris in 1856, when it localized the Crimean War and prepared the final settlement of that conflict.

During the years following the Congress of Berlin, Germany under the direction of Bismarck complicated the Congress of Europe by consolidating power groups in an alliance system. The power represented by the Triple Alliance between Germany, Austria-Hungary and Italy was offset by the combined powers of Russia, France and Great Britain under the Triple Entente. When the Concert of Europe convened at Algeciras in 1906 the first impact of the alliance system on international adjustments was experienced, and the inability of the Concert to control the alliances became apparent. Although the consultative system served to prevent some wars, it was credited with short term settlements only.

The record of world events which occurred following 1906 until the collapse of the Concert of Europe in 1914 illustrates the Concert's limited geographical scope, its inability to adjust to social and political changes, and its undefined functional scope.

As a factor in the balance of power system, international law has, with limited success, controlled the conduct of interstate relationships. The succeeding paragraphs on international law are devoted to an outline of its principles and the effect of these principles on the balance of power system.

Within states the purpose of national laws is to govern the conduct of state affairs and the control of society. This is achieved through "more or less widely diffused individual group convictions about right and justice, and a more or less centralized power structure. The interplay of conviction and power generates consent."[5]

The problems involved in applying these broad principles to international law fall within four broad headings which, in the order of their importance, are: the legal sovereignty of nations, nations as psychological ethnological political society, collectively nations have only a rudimentary sense of community and rights, and finally the unwillingness of the international community to accept legal obligations.

The central problem in the functioning of international law is national sovereignty, and so long as nations insist on exercising their so-called sovereign rights and privileges international law will remain a set of useful rules observed when it is considered expedient to do so.

The effectiveness of international law is dependent upon the organization of international power to support its coercive sanctions. Effectiveness is also dependent upon the preparedness of the organized international power to promote the useful adjustments of the various needs and interests of international society.[6]

Under the balance of power system international law, other than those minor laws which had long since been habitually accepted, was limited dictatorially. The international oligarchy of great powers used a peculiar form of law called the "European Interest". Although there were other international laws, based on treaties and guarantees, the European Interest was the highest law. This law meant the promotion of agreement among the great powers by all possible means. However, in the face of the struggle for greater power and prestige which occurred during the decade immediately preceding the First World War, the European Interest failed to unify the great powers and the ensuing era of international anarchy ended in conflict.

The balance of power system was, prior to and following its inception, influenced by several major factors which may be classed as those peculiar to the internal or national development of the European powers. The important factors, peculiar to European national development and which were common to the three phases under consideration, fall under three headings: national governments, nationalism and imperialism.

Under the heading of national governments, the development of political institutions within most European states was, at the time of the Congress of Vienna, autocratic. These autocratic national governments were, with few exceptions, a continuation of 18th Century systems and, as such, were under the control of a powerful aristocracy. The type of control inherent in autocratic rule precluded the participation of subject peoples in foreign or international affairs. Therefore, it may be stated with some truth that the practices of an aristocratic ruling hierarchy at the national level were introduced into the balance of power system. A simple expression of the same idea is that internal or national autocracy was injected into internationalism.

During 1815 autocratic government and its perpetuation was acclaimed by Metternich and the Czar as the essential condition necessary for international peace and prosperity. The Holy Alliance, an off-shoot of the Congress of Vienna, was designed to support Metternich's claim.

> "It has become fashionable to stress the moderation of the settlements of 1815 in the field of international relations and to overlook charitably their reactionary character. Metternich and the Czar were so convinced of the strength of the revolutionary forces in Europe that their anxiety to raise barriers against political reform was second only to that for the stability of the European state system. The forces of social change were to be balanced by a union of the sovereigns, if necessary against their own peoples. In Metternich's hands, this proved to be the real function of the Holy Alliance."[7]

It is significant that England, which had prior to 1815 established the essentials of democratic government, and under the influence of the "Philosophic Radicals" introduced sweeping social reforms, refused to participate in the Holy Alliance.

The gradual change from autocratic to representative government, which occurred during the period between 1815 and the Franco-Prussian War, was, in part, a response to the political philosophy of Hegel and Marx. Hegelian nationalism had, by 1815, become an European movement.

Nationalism's essential character, in a theoretical sense, involves common sympathies and the desire of peoples with common sympathies to cooperate with one another to the exclusion of others. It also involves a general desire to be in or under the same government. Other characteristics of nationalism are the size of the country, common language, religion, literature, and the central organization.

How did nationalism affect the balance of power system? Nationalism within European states caused several unique movements. In central Europe it was responsible for the unification of Germany, while in the Mediterranean area the unification of Italy was achieved as a result of its dynamic appeal. In addition to the unification movements, there arose in Europe a popular demand for national greatness and national prestige. Although nationalism in its various shades and subtleties was experienced by all European states, it was, in some of its dominant peculiarities, associated with specific countries or areas.

In France the representative Government of 1848, which grew out of a general movement toward social emancipation, was established as the result of a spontaneous outburst of 18th Century nationalistic ideals. The social changes in France were also caused, in part, by the revival and rising tide of French nationalism. Although the "second Republic" was short lived, nationalism, which contributed to its constitution, overflowed national borders and expressed itself in a republican attack on the balance of power system. Specifically, the attack was contained in the French manifesto to the powers of Europe, wherein Lamartine[8] announced that the international treaties of 1815 had ceased to exist legally for the French Republic, but that "the prudence of the Republic was for Europe a better and more honourable guarantee than the letter of treaties which had so often been violated or modified."[9]

This rather unusual statement of foreign policy, made by a republican government, was a departure from the time honoured approach to internationalism practised by autocratic sovereigns. In addition, the wording of the manifesto reveals the tenure of 19th Century nationalism.

Nationalism in France, following the Franco-Prussian War, was partly responsible for the "separation of church from state movement". Politically, the church-state conflict was supported by the illogical aspect of nationalism, which posed the question of whether or not Roman Catholics were loyal to the nation or the Papacy. The separation movement was in fact an example of the negative character of nationalism, and in those countries which were

predominantly Catholic it generated an anti-French sentiment.

Emotional and militant nationalism in France during the 1890's was the underlying reason for the rise of Boulanger.[10] Had General Boulanger not acquiesced at the critical moment when his ascent to power in 1890 was almost assured, it is possible that aggressive nationalism, which was associated with his name, might well have advanced the international conflict which was to occur twenty-five years later.

In England between 1870 and 1914 nationalism was one of the contributing factors in British colonial expansion. This nationalism was not as readily apparent or obvious as the nationalism associated with other European states, except perhaps for Disraeli's glorification of the British Empire. The movement in England was obscured by, and submerged in, 19th Century imperialism, the industrial revolution, and British control of a world-wide economic system. The effect of this somewhat complicated British nationalism on the international order in Europe was the establishment of England as the balancer or maintainer of the status quo.

European nationalism, in its extreme case, occurred in the Balkans. The existence of several violently nationalistic Slavic groups within Austria-Hungary weakened considerably the internal stability of that major power. The inability of the dual monarchy to adjust to the demands of nationalism within its borders culminated in the assassination of a minor European potentate on Serbian soil. The Murder of Archduke Ferdinand and his wife initiated the sequence of tragic events which led to the outbreak of World War I. It is clear that aggressive nationalism in the Balkans, which was supported by Russia and deplored by Austria, inflicted a damaging blow to the balance of power system.

The effects of nationalism on the international balance may be classed as resulting from the aggressive and constructive aspects of this general European phenomenon. Aggressive nationalism coexisted, in a somewhat obscure way, with constructive nationalism, however during certain phases of its evolution a distinction between its aggressiveness and constructiveness was not readily apparent. For the purposes of comparison the most dominant manifestation of the phenomenon has been the deciding factor.

Aggressive nationalism of the Balkan variety was the more devastating in its end result, as Boulangerism might well have been in France, had it not died with the emotional appeal of its stage manager.

There are several examples of constructive nationalism. These examples include the transformation of British colonies to independent Dominion status. In Europe, constructive nationalism contributed to the unification of Italy and Germany.

A unified Germany and Italy created, in Central and Southwestern Europe, two new great powers. This new international order altered considerably the European balance. The resulting international adjustments, made in response to the unification of these two great powers, led to a series of international alliances. Athough the balance of power system became more complex as a result of these events, it was essentially the same old system with new weights and counterweights. The greatest blow to the balance of power system was the infiltration of nationalism into foreign policy where it tended to express itself in old international grievances, accompanied by emotional and irrational pronouncements of national ambitions.

The third important factor which expressed itself as a national policy among the great powers was imperialism. Although imperialism was identified as a national and international movement during the century prior to the advent of nationalism, it did not share the academic respectability of nationalism. Generally, the explanation of 19th Century imperialism by Hobbs was applicable to that period only; on the other hand, Marx's interpretation of imperialism remains one of the essential laws of 20th Century communism.

Whether or not imperialism was the monster which resulted from the union of nationalism and capitalism, or the result of industrial revolution, or an answer to expanding European population, or the desire for national prestige, is relevant to the purpose of this essay. Therefore, the immediate aim is to briefly trace the development of imperialism among some of the European great powers and show its effect on the balance of power system during the phase which ended with the First World War.

By 1815 the old imperialism of the 17th and 18th Century, under the guise of colonialism and geographical expansion, was suspect. Those European nations, which between 1763 and 1870 participated in colonialism, rejected it on the basis that the cost of Empire outweighed the advantages of ownerships. It would be completely false to say there was no imperialistic activity during this early period, but it is true that by 1870 imperialism had generally fallen into disrepute.

With the decline in the old imperialism there occurred between 1870 and 1914 a new form of the phenomenon. The years between 1763 and 1870

have been referred to as the transition period between the old colonialism and the new imperialism. "Viewed in retrospect, this century was but an interlude between the old and new imperialism. It was a period during which the Western nations were revolutionizing their technology and gathering their energies for another epoch of overseas expansion destined to overshadow completely all earlier achievements."[11]

The underlying factors which caused the revival of imperialism in Europe were a complex amalgam of industrial development, nationalism, capitalism, and economic change. By 1880, the industrial revolution with its vast technological advances had penetrated France and Germany and by the turn of the century these two powers were reaping the first fruits of industrial wealth. The growing industrialization of Germany and France placed upon these two countries an ever-growing demand for raw materials and new markets. Indeed, by 1910, Germany's industrial produce, its goods, services, and capital were in open competition with those of England and France.

There is little doubt that economic expansion and progress within European states resuscitated and gave new meaning to imperialism. While the European powers enjoyed their increased wealth and prosperity, a cupidity for international pre-eminence through economic suzerainty evolved. As a medium to increased national power and prestige, economic suzerainty embraced imperialism as its agent provocateur. However, as national power increased, imperialism absorbed economic suzerainty, its *raison d'etre,* and became an end in itself. By adopting imperialism as a national policy, the great powers were obliged to satisfy its demand for military power.[12]

When imperialism became competitive during the years following 1890, the relative military power of the imperialistic nations became a diplomatic yardstick used to determine recourse to war or peaceful negotiations.

How did competitive imperialism affect the balance of power system? At the outset, great power equality among the international oligarchy was required as an essential element for great power stability. The balance system, by its very nature, is a rigid international political structure. When one member of its oligarchy developed its national power beyond the limits considered tolerable by the hierarchy as a whole, then international adjustments ensued. The Morocco crises of 1905 and 1911, the Boer War, the Fashoda incident, and the Triple Entente of 1911 are examples of these adjustments.

By 1914 competitive imperialism had reduced most of the globe to spheres of influence. The international tension which grew out of this rigid system of guarantees and agreements was a contributing factor in the disintegration of the balance of power in Europe.

The twenty years between the close of the First World War and the outbreak of the Second World War constitutes the second phase of conflict to balance of power. The national and international events which occurred between conflict and balance of power in the second phase are compared in the succeeding paragraphs with those of the earlier period.

By 1919 the balance of power system had fallen into disrepute and the victorious powers embraced collective security as a new concept in internationalism. The League of Nations, which grew out of President Wilson's war aims[13] was established to administer this new concept. The legal basis of collective security was contained in articles 10 and 16 of the League Covenant. While the former article "embodied and expressed guarantee of the existing international status quo in the relations between members of the League"[14], the latter article obligated the member nations to apply sanctions against member states that pursued war as a national policy.

What were some of the fundamental differences between security under the balance of power system and this new concept? Under the old system the great powers tended to perpetuate their own existence at the expense of the minor states. The international adjustments, which were made to balance power differentials among the great powers, inevitably involved arbitrary sanctions against the minor powers.

When the balance of power system was in equilibrium, the security of the lesser powers was subject to the paternalism of the great power alliance.

Although the great powers received special recognition as permanent membership of the League Council, this position carried no special privileges. In effect, the collective security clauses of the covenant equalized all powers, both great and small, as the providers of security. The arbitrary sanctions applied by the power hierarchy under the balance system were transformed under the covenant into a deterrent against great power expansion at the expense of minor states.[15]

Collective security under the League of Nations was upheld by the minor powers as their salvation, however, as will be seen, the forces of political change accompanied by 20th Century nationalism and imperialism revived the old balance of power system.

The changes in the form of European national governments began prior to World War I and continued during the post-war period. Democratic government was acclaimed by almost every state in Europe, consequently Europeans, through representation, influenced international affairs.[16] This was a marked departure from the oligarchic background of the balance of power system.

The governments of Europe were indeed faced with great social and economic changes. In addition the poitical divisions within western European countries resulted in coalition governments. Therefore, as a result of political compromise and the demands of domestic problems, international decisions were not always dynamic or decisive.

The foreign policies of European states, which grew out of national interest, were divergent in the extreme. France, frustrated through fear of Germany and its attempt to achieve security through the League of Nations, fell back on the principles of power balance. The Little Entente and Locarno are adequate testimonies of this trend while the latter treaty may, with some stretching of the imagination, be likened to the old Concert of Europe in action. British foreign policy generally supported the League of Nations, however the collective security clauses of the covenant and the proposed Geneva protocol were viewed by British statesmen as ineffective, and as the means whereby minor powers might fight their wars at British expense.[17]

Japan's invasion and occupation of Manchuria in 1931 and its aggression in Shanghai were the first really post-war tests of the League's effectiveness. Unfortunately, the League's action was conciliatory and completely ineffective. This unopposed aggressive action in China, perpetrated by a great power, was sufficient proof of the League's inability to maintain the status quo. Japan's aggressive action at the expense of a minor power paralleled similar aggressions of the pre-collective security era.[18]

In 1935, using the "rule of force", Italy embarked on an expansion programme in Ethiopia. Although the League applied sanctions, the sum total of its effectiveness against Italian aggression was negligible. Mussolini's aggression followed the Japanese pattern.

In summarizing these events it is apparent that any attempt to achieve international stability based on an international law, devoid of effective sanctions, is equivalent to international anarchy. Unlike the Concert of Europe, the League did not attempt to readjust power differentials. With the growing power of Japan in the Orient and the United States in America the "European Interest" was no longer the highest law of international stability.

There were, of course, other factors in the background to the foregoing events. These events or movements were similar to those which plagued the balance of power system during the phase one era; nationalism and imperialism were still rampant in Europe.

Following the First World War, nationalism and the doctrine of self-determination were responsible for the creation of Yugoslavia, Czechoslovakia, and several other European States. Some national groups within these states were not completely indigenous to these new nations. Consequently, minority groups and pockets of volatile nationalists actually existed in most of the central European countries; it was a pre-war Balkan nationalism in its death throes. However, nationalism was not destined to pass from the European scene until it had contributed to yet another world conflict.

Adolph Hitler's rise to political power in Germany was, in part, caused by his appeal to the nationalistic trends of his time and to the desire of the German people to vindicate their national honour in the face of the Versailles guilt clauses. Hitler's astute and ruthless manipulation of political power and his keen appreciation of the limitations inherent in the League of Nations were keys to his power in Europe. The doctrine of self-determination, a principle endorsed by the victors of the First World War, was a very convincing argument when applied to the Sudeten Germans. Hitler did not hesitate to use, for his own purpose, the idealistic and politically unrealistic doctrines of Wilson.

When Hitler and Mussolini joined forces in 1937 the European power imbalance was complete. Unfortunately, by 1938 a concerted response by Britain and France was too late, and the "Concert of Munich" failed to redress the power imbalance. It is possible that the United States might have fulfilled the role of balancer in the traditional British fashion, but that nation chose to remain aloof.

It may be said with some truth that ideological covenants filled the power vacuum caused by the First World War.[19] However when great power, cloaked in nationalism, imperialism, and militarism reasserted itself, ideological internationalism was incapable of redressing the imbalance and the Second World War ensued.

Between 1933 and 1938 collective security was in decline. The major factors involved in the inability of the League of Nations to arrest this decline are embodied in the five assumptions upon which collective security rests. The three most important are

considered.[20] At the outset collective security does not place unlimited reliance on the pledged word; sanctions were introduced as the guarantor of treaty obligations. It has been argued by Schwarzenberger that if every state met its obligations there would be no requirement for sanctions. "If, however, such options should prove to be unwarranted there is no greater likelihood that states will apply sanctions than that they will carry out their original obligations."[21]

The second assumption is that most members of the collective system must be convinced that the maintenance of the status quo is in their common interest and justifies the necessary sacrifices. Unfortunately there was no common denominator in national interest and the divergent interests of some member states contributed to the general collapse of the system. There is a remote possibility that the nations of the world, faced with nuclear annihilation, will embrace self-preservation as the common denominator.

A third assumption is that collective security must be strong enough to cope with any combination of powers likely to challenge the existing status quo. Here again the League failed miserably.

The third phase of the recurring pattern from war to balance of power occurred during the period from 1945 until 1955. National governments during this period were either totalitarian or democratic and their foreign policies reflected national interests based on their political systems.

From 1945 until the death of Stalin in 1953, Russia tended to dominate Eastern Europe and Southeast Asia. Stalin's methods, which were essentially a cunning application of the "rule of force", brought within the so-called "Russian sphere" many of the Baltic, Central and Eastern European states.

The change in Soviet leadership following Stalin's death did not alter Russia's international application of communism; Russian foreign policy was unchanged. However, certain adjustments in the Soviet ruling hierarchy created what is now known as collective leadership.

Unfortunately, this new leadership trend in Russia, although professed by some analysts to be a marked departure from Stalinism, remained unpredictable. However, its impact on Soviet satellites caused upheaval in Poland and Hungary.

Following the Second World War, the western powers retained their democratic and representative form of government and under the influence and leadership of the United States constituted a power bloc against communistic expansion. This new element in the balance of power manifested itself in international regional organizations dedicated to collective defence.

Russian domination of central and eastern Europe was matched by United States domination in western and southwestern Europe. The pattern of great power struggle was thus established on geographical lines. However, these lines were not confined to Europe alone; they became world wide and eventually developed into a clearly defined frontier between communism and democracy. This frontier became the front line of United States containment policy.

The American containment policy displayed both constructive and provocatively aggressive tendencies. In pursuing this policy the United States used a vast range of phenomena including nationalism, economic imperialism, and militarism. The Truman Doctrine and the Marshall Plan were instruments of the containment policy.

During the peace treaty negotiations of 1947, it became apparent among the western powers that the Soviet Union's stand on the issues involved stemmed from its inflexible political philosophy. It was also apparent that the meaning of agreements previously reached at Yalta and Potsdam, when interpreted by the Russians in the light of Marxian dialectics, was something entirely different. This difference in interpretation, based on fundamentally different and diametrically opposed political philosophies out of which compromise and fruitful negotiations were remote, set the pattern for future American-Russian relationships.

When compared with twentieth century international negotiations, it is clear that the Concert of Europe achieved success on the basis of its universal political philosophy. The 19th Century great powers were in fact dedicated to a common aim: the perpetuation of their autocratic state system. However, England refused to join the autocratic Holy Alliance for reasons associated with its democratic philosophy. Therefore, some truth exists in the hypothesis that a mid-twentieth century parallel to a nineteenth century England is communist Russia.

The impact of nationalism on the balance of power during the post Second World War era has been profound. Except for France, among the western powers it has contributed to the collapse of colonialism and the emergence of new independent states.

The basis of post Second World War international organization was the Atlantic Charter. This declaration of policy, agreed to by the United States and Great Britain in 1941, was the founding charter of the United Nations. The Atlantic Charter was in many ways not unlike President Wilson's war aims

of 1918, which was the founding charter of the League of Nations. The executive power of the United Nations was vested in the Security Council, which was made up of the five great powers: United States, Soviet Russia, Great Britain, China and France. In addition there were seven temporary members elected by the assembly for two years. It was the responsibility of the five permanent members in the Security Council to ensure world peace. This theory placed upon all members of the United Nations an obligation to subordinate their independence to the objectives of the United Nations organization.

This was a departure from the operation of collective security under the League Council and was based on the principle that responsibility must go hand in hand with power.

The crucial problem in the Security Council was the maintenance of the status quo among the five great powers. The veto, which was the accepted basis of unanimity within the Security Council, was designed to protect the national interests of the great powers. In another sense it might be considered as the balancer of power among the five major states.

Russia's use of the veto grew out of her post-war position in Iran. During 1948 certain Iranian oil rights were being exploited by the Soviet Union and these Soviet interests were being protected by Russian troops on Iranian soil. Iran, prompted by Great Britain, brought this matter to the Security Council and the ensuing Council action tended to embarrass the Russian Government. At the outset Russia had requested that this matter not be discussed within the Council; however the United States and Great Britain, supported by a majority in the Council and the Assembly, pressed the matter.

Russia in this instance had no recourse but to apply the veto; its only alternative was complete withdrawal. This unfortunate incident, and continuous pressure by the United States and Great Britain, were the causes of Russia's unrestricted use of the veto.[22]

Great Britain and the United States in their attempt to coerce Russia broke one of the fundamental rules of great power relationships.

During the 19th Century great power coercion against another great power resulted in war or in a system of alliances made up of opposing camps. The fact that great power coercion directed against a member of the international oligarchy seldom occurred accounted for the long periods of international stability.

There is a modern parallel to the 19th Century adjustments in the balance of power system. This modern parallel was the inability of the great powers to achieve power equilibrium in the Security Council, followed by an attempt to coerce a member of the oligarchy (Russia), followed by the traditional 19th Century system of alliances. These facts have been written into the North Atlantic Treaty and a host of other defensive alliances.

At the half-way mark of the 20th Century, international stability was dependent upon the balance of power. One hundred years ago the world depended upon the same solution for international stability. However, there are many differences between 20th and 19th Century balance of power.

In the 19th Century the balance was confined to Europe where the international oligarchy consisted of seven great powers. The 20th Century oligarchy consists of only two great powers. In the former case there was room in the world where power adjustments might be made, but in the latter case there is no scope for international adjustment. Perhaps it is easier to balance two equals and achieve peace, but this presupposes that there will be no change in international political, social and economic relationships. Until a third great power develops, the current balance of power will be maintained by nuclear weapons and the risk of annihilation.

Although the United Nations continues to function as an international agency, the balance of power system with its Concert of Europe, revived in summit conferences, is the arbiter of war and peace.

Footnotes

[1] During the 19th Century and the first fourteen years of the 20th Century, England was the balancer in Europe.
[2] Schuman, F. L. *International Politics*; McGraw-Hill, Toronto, 1948; pp. 374-5.
[3] Liska, G. *International Equilibrium*; Harvard University Press, Cambridge, 1957; p. 36.
[4] "The legal mechanism for consultation among great powers failed in 1925, but the practice of international conferences in time of peace to regulate international political views and interests had been firmly established. No permanent machinery existed but a series of conferences from 1826 to 1913 served to inculcate the habit of mutual consultation." — Gerard J. Mangone, *International Organization,* 1954; p. 48.
[5] Ibid, p. 18.
[6] Ibid, p. 41.
[7] Schwarzenberger, G. *Power Politics*; Stevens and Son, London, 1951; p. 270.
[8] A member of the Provisional Government, 1948; also a French poet and orator.
[9] Andre Lebon, *Modern France 1789-1895*; T. Fisher Unwin Co., London, 1897; p. 263.
[10] "The General's secretary recorded: 'Wherever he went the people applauded him with frenzied enthusiasm: daily I saw men weep with joy at shaking him by the hand, women stormed his guard and kissed him with patriotic fervour'." — Langer, W. L. *European Alliances and Alignments*; A. Knopf, New York, 1950; p. 462.
[11] Schuman, F. L. *International Politics*; McGraw Hill Co., Toronto, 1948; p. 514.
[12] An example is Germany where, "Tirpitz at once began to make his plans for giving Germany a modern fleet, and by October, 1897, he had put his programme in form and had

secured the approval of the Kaiser. His proposed naval expansion bill called for the construction of a German fleet which would enable Germany to prevent a blockade of German coasts and keep open the lanes of commerce. — Benns, F. G. *European History Since 1870*; Appleton Century Crofts Inc., New York, 1950; p. 79; Hayes, J. H. *Contemporary Europe Since 1870*; pp. 266-7.

[13] Also known as the Fourteen Points: Point 14 specifies that "a general association of nations must be formed under specific covenant for the purpose of affording mutual guarantees of political independence and territorial integrity to great and small states alike." — Snyder, L. L. *Fifty Major Documents of the 20th Century*; Van Nostrand Co., New York, 1955; p. 28.

[14] Schwarzenberger, G. *Power Politics*; Stevens and Son, London, 1951; p. 492ff.

[15] The great powers, Great Britain, France and the United States, Italy and Japan were the original great power members of the Council.

[16] An example of this occurred in France where the Popular front, on a platform of defending democracy, was elected to power. Hitler rose to power by democratic process which he later annulled. An indirect influence was the failure of the British government, faced with a depressed economy, to vote enough money to support its military establishment. — Hayes, C. J. *Contemporary Europe Since 1870*; Macmillan Co., New York, 1958; p. 477.

[17] Neville Chamberlain, House of Commons, February 22, 1938: "If I am right, as I am confident I am, in saying the League as constituted today is unable to provide collective security for anybody, then I say we must not try to delude small weak nations into thinking that they will be protected by the League against aggression and acting accordingly, when we know that nothing of the kind can be expected."

[18] Russo-Turkish War, 1877.

[19] The power vacuum caused by the defeat of Germany and Austria-Hungary and the ineffectiveness of Russia as an international unit.

[20] The other two are: (i) Collective security must be universal; (ii) Neutrality is incompatible with the concept. — Schwarzenberger, G. *Power Politics*; pp. 192-3.

[21] Ibid, p. 194.

[22] "The United Nations cannot deal with disputes that involve the balance of power in the world. The balance of power has to be redressed and settled in the peace treaties of the great powers themselves." — Lippmann, W. *The Cold War*; Harpers, New York, 1947; pp. 58-59.

Bibliography

Schwarzenberger, G. *Power Politics*; Stevens and Son, London, 1951.

Langer, W. L. *European Alliances and Alignments*; A. Knopf, New York, 1950.

Schuman, F. L. *International Politics*; McGraw-Hill Co., New York, 1948.

Mangone, G. J. *International Organization;* McGraw-Hill Co., New York, 1954.

Jessup, P. C. *International Security*; Council on Foreign Relations, Inc., New York, 1935.

Crowley, D. W. *The Background to Current Affairs*; Macmillan and Co., New York, 1958.

Liska, G. *International Equilibrium*; Harvard University Press, Cambridge, 1957.

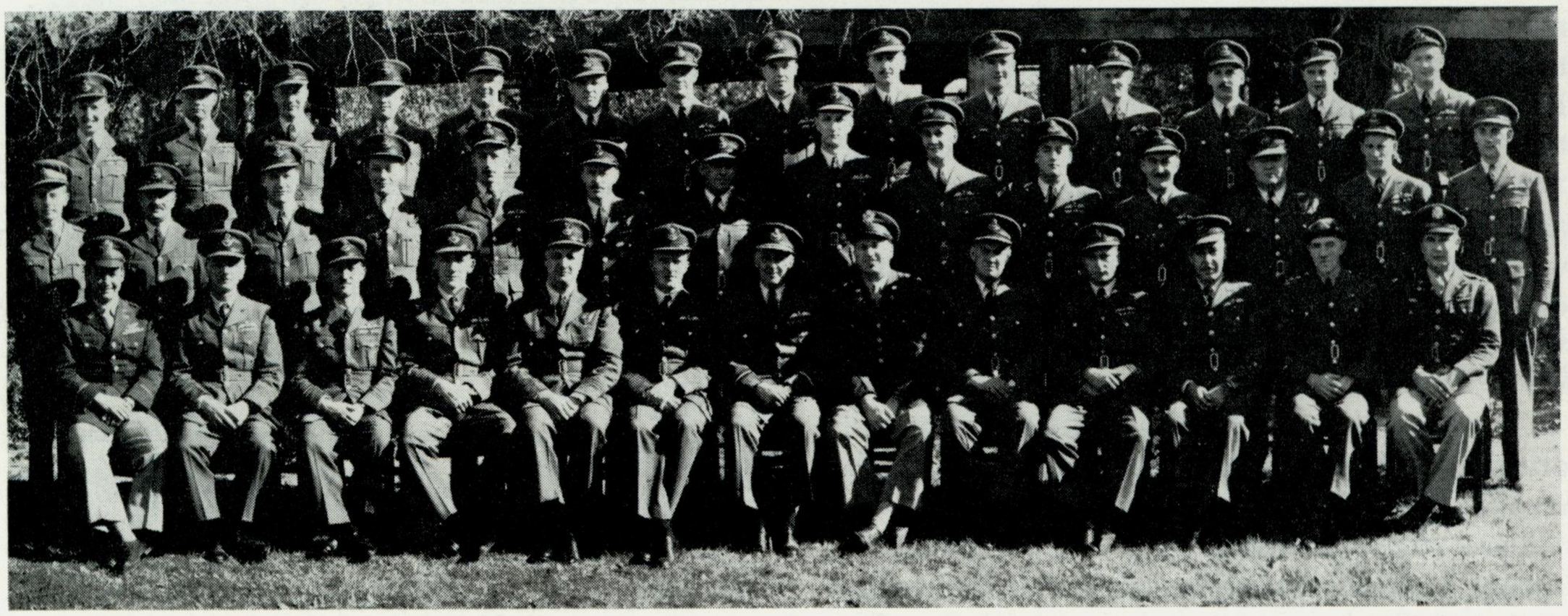
Carr, E. H. *Nationalism and After;* Macmillan and Co., London, 1945.

Deutsch, K. W. *Political Community and The North Atlantic Area*; Princeton University Press, Princeton, 1957.

Lebon, Andre. *Modern France 1789-1895*; T. Fisher Unwin, London, 1957.

Reminiscing

R.C.A.F. STAFF COLLEGE FIFTH WAR COURSE



Back Row — S/L G. C. Semple, D.F.C., S/L B. G. Miller, S/L N. R. Johnstone, W/C H. L. Taylor, S/L B. R. Walker, D.F.C., U.S.A.M., W/C T. A. Spruston, W/C W. H. Stapley, W/C H. C. Godefroy, D.S.O., D.F.C., S/L S. J. Balke, S/L A. W. Speed, S/L R. Dobson, S/L R. B. Ingalls, D.S.O., D.F.C., W/C J. D. Pattison, D.F.C., W/C R. A. Buckham, D.F.C., D.F.C.U.S. **Middle Row** — Maj. G. B. Robertson, S/L M. J. Rubin, S/L R. M. Donaldson, W/C M. A. W. Davidson, S/L D. L. Ramsay, W/C H. Pearce, M.B.E., W/C R. I. Thomas, A.F.C., S/L S. A. Bushell, S/L G. H. Avent, D.F.C., S/L W. A. G. Conrad, D.F.C., W/C C. A. James, A.F.C., S/L J. McCulloch, S/L D. G. Malloy, D.F.C., S/L W. W. Gilmour. **Front Row** — Maj. G. J. LaBreche, S/L A. A. Harcourt-Vernon, W/C J. P. McCarthy, D.F.C., W/C R. E. E. Morrow, D.F.C., W/C R. K. Fraser, G/C R. M. McKay, A/C G. E. Wait, Col. Deichler, G/C E. W. Kenrick, W/C G. H. Elms, W/C L. O. Cooper, Lt. Col. W. R. Fysh, Lt. Col. J. B. Summers.

The Staff of the R.C.A.F. Staff College

COMMANDANT
Air Commodore W. A. Orr, C.B.E., C.D., B.Sc. — idc

DIRECTOR OF STUDIES
Group Captain G. H. Newsome, A.F.C., C.D., B.Sc. — ndc

DIRECTING STAFF
Wing Commander A. F. Avant, D.S.O., D.F.C., C.D., B.Sc. — psa
Wing Commander J. R. Beggs, C.D. — psac
Wing Commander F. P. Clark, A.F.C., C.D. — psac
Wing Commander J. H. Cooper, A.F.C., C.D. — afsc
Wing Commander M. Davies, C.D., B.A.
Lieutenant-Colonel H. F. Hoskin, D.S.O., C.D. — psac
Professor J. I. Jackson, D.F.C., B.A., M.F.A. — psac
Wing Commander G. A. Lee, A.F.C., C.D. — psac
Wing Commander A. H. Middleton, A.F.C., C.D. — psac
Wing Commander R. G. Orpen, C.D. — psac
Commander J. W. Roberts, C.D. — psac
Wing Commander A. R. Ross, C.D. — psac
Wing Commander F. N. Sheffield, C.D. — psac
Wing Commander P. G. Sinclair (R.A.F.) — psa
Wing Commander V. C. H. Stuart, C.D. — rmc, jssc
Squadron Leader B. C. Denomy, D.S.O., C.D. — psac
Squadron Leader R. T. Heaslip, A.F.C., C.D. — psac

TRAINING SERVICES OFFICER
Flight Lieutenant J. T. Seaman, C.D.

ADJUTANT
Flight Lieutenant G. P. Simboli, C.D.

R.C.A.F. STAFF COLLEGE 23RD COURSE



Front Row — F/L W. R. Johnson, S/L B. C. Denomy, W/C J. H. Cooper, W/C G. A. Lee, W/C F. P. Clark, Prof. J. I. Jackson, W/C A. F. Avant, W/C A. Griffiths, W/C W. Y. Martin, A/C W. A. Orr, A/M H. Campbell, G/C G. H. Newsome, Lt. Col. J. E. Leach, W/C M. Davies, W/C A. H. Middleton, W/C J. R. Beggs, W/C R. G. Orpen, W/C F. N. Sheffield, W/C A. R. Ross, W/C V. C. H. Stuart, S/L R. T. Heaslip, F/O G. P. Simboli. **Second Row** — S/L K. C. Mason, W/C R. A. Powell, LCDR P. C. H. Cooke, S/L H. R. B. Hebb, S/L F. S. Lemon, W/C H. W. Lupton, S/L W. Sherry, S/L E G. Smith, S/L E. M. Butcher, S/L R. K. Acheson, W/C L. A. Hall, S/L J. G. Duncan, S/L A. E. Paxton, W/C G. H. Currie, W/C C. Jackson, S/L J. T. Mullen, S/L D. W. Souchen, W/C J. Mackay, S/L R. F. Herbert, S/L H. J. Weeden, CDR R. B. Hayward, Maj. W. L. Wasson, W/C E. C. Miller. **Third Row** — S/L P. Bissky, S/L A. W. Breck, S/L M. G. Bryan, Maj. A. S. Christian, S/L J. W. Fiander, S/L R. J. Gurney, LCDR D. S. Jones, S/L B. L. Mackenzie, Maj. J. W. McClennan, S/L E. J. Trotter, S/L J. W. D. Pudney, S/L D. L. Mackenzie, S/L K. O. Moore, S/L J. D. Richards, S/L R. V. Smith, S/L E. D. Harper, S/L C. Brown, S/L D. W. J. Carr, Lt. Col. P. E. Joyal. **Back Row** — S/L Z. R. Charko, LCDR R. Heath, S/L W. McIlhagga, S/L R. T. Keill, S/L K. W. Simpson, S/L R. D. Schultz, LCDR M. A. Turner, S/L W. R. Lloyd, CDR B. C. Thillaye, W/C H. J. Hemsley, LCDR B. L. Judd, S/L I. D. Tenove, S/L J. C. Reid, S/L S. V. McKeague, S/L M. W. McClellan, S/L P. Bula, LCDR A. M. Cupples, S/L W. G. Lafferty.

Book Reviews

DECISION FOR CHINA: COMMUNISM OR CHRISTIANITY

By Paul K. T. Sih (262p., Henry Regnery Company, Chicago, 1959)

Reviewed by EDWARD B. JOLLIFFE, Q.C.

DR. PAUL SIH is in exile from China. Formerly a Confucianist diplomat representing Chiang Kai-shek at Rome, he became a Catholic nine years ago and is now Director of the Institute of Far Eastern Studies at Seton Hall University, Newark, N.J. His thesis is that the Chinese tradition and character have an affinity to the Christian faith, but are incompatible with Communism. At the same time he argues that unless the West gives more vigorous leadership and support to anti-Communist forces in Asia, the whole continent is likely to fall under the influence of Red China.

Like many gifted Chinese, highly educated at home and abroad, Dr. Sih has an excellent command of English. He writes with lucidity and force which few of our professors could match in their own language. A Confucian background and the Chinese classical disciplines make for effective literary style, if not always for logic or realism. He is at his best in a brief summary of the origins and development of an ancient culture. He cogently analyses the impact of western civilization — on the whole a destructive one — leading to the fall of the Manchu dynasty in 1911, followed by the short-lived democratic experiments of Sun Yat-sen, the failure of Chiang Kai-shek and the rise to power of Mao Tse-tung and his Communists in a quarter-century of war.

The book is marked by striking generalizations with which most observers would agree. "Even under foreign rule . . . Chinese culture has shown a rare power for absorbing alien elements and resisting foreign influences." It is a culture, he says, which "emphasizes the supremacy of the practical over the abstract," although he fails to recognize that this very fact is being successfully exploited by the Communists today. "China derived her cultural heritage mainly from Confucius," states Dr. Sih, and adds: "No Chinese can be strictly called a Confucianist, a Taoist or a Buddhist. He follows all three at one and the same time." This may be an exaggeration, but certainly Confucianism was primarily a code of ethics and the other Chinese faiths did not usually claim a monopoly of dogma or revelation.

Dr. Sih believes the tendency to assume there is merit in all religions makes his people naturally receptive to Christianity. The fact is that after centuries of missionary work (starting with the Franciscan John of Monte Corvino in 1294) less than one per cent of the population called themselves Christian. Today in Red China many temples and churches remain open to the faithful, but all education has been taken over by a government striving to indoctrinate 650,000,000 people with the principles of Maoist communism, which identifies religion with superstition. Christians held high office under Emperors of the Yuan and Ming dynasties centuries ago and certain religious leaders hold high office today (including the Panchen Lama and the Anglican Archbishop of Peking) but it is unlikely that communist schools will produce such oddities in the future.

A zealous Roman Catholic and a loyal supporter of Chiang Kai-shek, Dr. Sih argues passionately that only western religion can displace western Marxism in the vacuum created by the collapse of the old order in China. His hopes command the sympathy of many churchmen, particularly those who have officially endorsed his book as authorized reading for Catholics. In historical perspective, however, his thesis is impaired by three basic fallacies which reduce certain of his conclusions to the level of wishful thinking.

The first fallacy is that of exaggerating the actual effective importance of Christianity in Asia. Regrettable though it may be, in fact the vast majority of more than one billion illiterate oriental peasants know almost nothing of the four Gospels and cling

to their own gods. It does not impress them to be told, as Dr. Sih emphasizes, that Chiang Kai-shek in Formosa or Syngman Rhee in Korea are devout Christians. Among these peasants, who have always lived on the verge of starvation, countless Communist missionaries carry a simple message compounded of materialism and nationalism. Western economic aid and western missions are rather like drops in the proverbial bucket, and western theories of freedom and democracy are meaningless to people who have never known either.

A second fallacy — and a dangerous one in the struggle for Asia and Africa — is the tendency of writers such as Dr. Sih to identify the Christian religion with a political cause or even with the national interests of the United States. The whole book is a mixture of religious and political argument. In a foreword, Rt. Rev. J. L. McNulty, President of Seton Hall University, bluntly declares: "The future of China is with America and with Christianity." This naive equation is the kind seized upon by Communist propagandists throughout Asia to prove that the Church is a mere tool of "American imperialism." Orientals do not regard the civilization of this wealthy continent as being notably religious. They have seen little evidence of spirituality in Hollywood films or the behaviour of visiting Americans. Dr. Sih and his friends fail to realize that in China today the word "America" is associated, not with religion, but with a naval blockade along the coast and a ten-year embargo against all trade. These are bitterly resented by Communists and non-Communists alike (as I found during my visit to China in 1958) and the more so when they know that Americans trade with the Soviet Union, entertain Khruschev's lieutenants and welcome cultural exchanges with the Russians.

Another Roman Catholic, Paul Fauré (a former Premier of France who also held the portfolios of Justice, Finance and Foreign Affairs) visited China in 1957. His book, "The Serpent and the Tortoise," is a careful and objective analysis of Red China by a seasoned observer. Dr. Sih, however, is so carried away by his sincere hatred of Communism and all its works that he is blind to reality. The reality is that Communist China in less than a decade has achieved great material advances, its government is more strongly consolidated than ever and its importance in world affairs is steadily increasing. Dr. Sih has persuaded himself that the régime will fall of its own weakness. He relies on a host of second-hand reports from Hong Kong, Tokyo, Saigon and even American writers as far away as Warsaw. By such dubious methods he is led into patent absurdities and inaccuracies — for example, his reference to a Toronto newspaper as the "Global Mail." He ignores the testimony of Paul Fauré or such eminent Canadians as the President of the Royal Bank, the Vice-President of the University of Toronto, the Chairman of the Ontario Hydro, and many others who have actually visited Red China. Their reports are entirely different from those of the imaginative Americans who have never been there.

Dr. Sih also ignores the importance of India. India alone may be compared in size and population with China. It is in India that the democratic tradition is strong, the result of long British influence. The West should look to India and not to Formosa as the real bastion of freedom in Asia.

DIPLOMACY IN THE NUCLEAR AGE

By Lester B. Pearson (114p., S. J. Reginald Saunders & Co. Ltd., Toronto, $3.00)

Reviewed by DR. MARCUS LONG

THE futile wrangling of the foreign ministers over the Berlin and German questions could be taken by Mr. Pearson as support for his objections to modern public diplomacy. He feels that the give and take needed for agreement is impossible with the representatives of press, radio and television either present at the sessions or waiting outside the door for information and communiques. Moreover, he feels that foreign ministers should spend most of their time at home, framing desirable policies with the help of expert advisers, instead of trying to shape or remould policies in the disturbing atmosphere of a conference. The professional diplomat, unheralded and unbothered by the world press, should be reinstated to a position of diplomatic power.

Mr. Pearson can find wide support for his contention. Kennan, for instance, maintains that "it is not the hectic encounters of senior statesmen under the spotlight of publicity which we need; it is the

patient, quiet, orderly use of the regular channels of communication between governments, as they have grown up and proved their worth over the course of the centuries".

It is difficult not to agree to this support of earlier ways of conducting diplomatic negotiations, given by such experienced men. Nevertheless two major difficulties occur.

I suspect that Mr. Pearson has fallen into the pit of exaggerating the past. The Congress of Vienna is constantly quoted as proof that diplomacy, properly conducted, can lead to military stabilisation and a form of peace. But this can only be accepted if the eyes are closed to the real situation in the nineteenth century and to the forces, other than diplomatic, such as the power of Britain which helped to maintain the unstable peace.

"It is true that in the rosy light of retrospect the period after the Congress of Vienna has seemed more peaceful and idyllic than it was. To the men of the time, says a more realistic writer, the period 'was one of appalling turmoil. It was an armed peace'."[1]

There is a much more important point. The leaders of the Soviet Union have decided they can forward their aims better by appealing to the people of the world over the heads of their governments. Public diplomacy is the diplomacy they want. We may deplore this but there is little point in a nostalgic dream for the good old days when their return is impossible. We would be better to concentrate on means of countering the Soviet advantage in the public forum. While Mr. Pearson offers some suggestions to that end they are not too satisfactory.

The question of diplomacy among the members of NATO raises a number of interesting points. Mr. Pearson opposes any suggestion of a committee of the major nations as suggested by France and at the same time, deplores the present tendency to present separate national notes to the Communists, even though other members have been informed of their contents. He proposes that NATO should have a permanent Council which would function as the Cabinet does in Canada to frame a unified policy.

It is not quite clear how this would work. In the Canadian cabinet if any member disagrees completely with the policy advocated by his associates he is expected to resign. If the same principle held in the NATO council then, presumably, if a country like Greece disagreed with the general point of view Greece would have to resign from NATO. The result would be chaos.

Perhaps the answer suggests some form of group dynamics in which the lowest common denominator of agreement would be accepted as the highest form of policy.

The apparent difficulties do not, of course, obscure the ideal value of a form of general agreement. So long as our representatives remain divided among themselves in policy so long do we give the Communists an advantage in any public negotiations, at least.

Mr. Pearson is not unaware of the very great difficulties. "This," he admits, "will not be easy, but it is essential, if NATO is to achieve that cohesion and unity in policy which is necessary to its survival." I suspect he is thinking beyond the demands of diplomacy, important as they are, to the continuing dream of an Atlantic community potentially present in the NATO organization but more ignored than forwarded.

One major concern of any major nation today should be the establishment of means that would prevent a major world war. Mr. Pearson shares the common view that there is no likelihood of either side launching a total war. He underlines the familiar danger that we may slip into such a major war unless we have means, preferably under the auspices of the United Nations, for preventing or stopping limited wars which might easily spread.

He recommends the formation of a permanent staff organization at New York "to which the members of the UN – except the permanent members of the Security Council – would earmark trained and equipped police contingents to be used on the decision of the UN". He sadly reflects that there is little possibility of persuading the members of the United Nations to accept such a responsibility.

His suggestion, however, is important because it reflects his thinking on the troublesome problem of the relation between power and diplomacy. Diplomacy is completely emasculated unless it is backed with power.

The difficulty is that the Western Powers, largely under the leadership of the United States, are concentrating too much on the wrong sort of power. "Nuclear weapons of mass destruction . . . provide no solution to the problem of accidental or limited war," the most obvious danger today. "So we keep on becoming more and more powerful in the weapons we can't use." Nothing seems to show more fully the folly of our present emphasis on the wrong sort of power to support our diplomacy.

Policy is also important. In a few brief paragraphs Mr. Pearson ranges over the problems of aid to the

underdeveloped countries (urging assistance without strings attached), the need for greater economic cooperation between the nations of the Free World (including the possibility of North American participation in movements like the European Common Market), the need to stand firm in Berlin and the wisdom of withdrawing support for mad adventures in Matsu and Quemoy.

It is obvious that Mr. Pearson did not win a high measure of international respect without showing wisdom and understanding. It follows that his analysis of what ought to be done is worth serious consideration. The fact that it is concerned with what ought to be done leaves open the possibility of discussion and disagreement. It makes his presentation, as I have suggested, sometimes too nostalgic for a past that cannot be revived; others will think that it is often too idealistic to meet the urgent needs of our troubled times. All will have to agree that it is an excellent presentation of a point of view well worth consideration.

[1] *Power and Diplomacy* by Dean Acheson. Harvard University Press, 1958. P.3.

WAR AT THE TOP

By James Leasor (293p., London and Toronto, Michael Joseph, $5.00)

Reviewed by WING COMMANDER A. F. AVANT

THIS BOOK is a sequel to the many fine accounts which have been written about World War II. It is not a history of the war; rather it is written about the people who directed the war — the leaders of government, the generals, admirals and air marshals, and their principal advisors. As one might expect, the principal character is Winston Churchill.

James Leasor, in his story, writes of the experiences and impressions of General Hollis, Assistant Secretary to the War Cabinet and Chiefs of Staff Committee. Hitherto but sketchily touched upon in many and several books, this discussion and analysis of the war leaders should take its place beside Churchill's and Montgomery's memoirs and other narratives of World War II. For in his book Leasor brings out the human side, the personal touches, the emotion stirred up in debate, the intellect of individuals and discusses the judgment and perspicacity of the war leaders. The reader is also given a glimpse of some of the activities of intelligence agencies, and of much other activity behind the scenes.

Leslie Hollis began his secretarial career in 1936. At this time as a Major in the Royal Marines, he was appointed Secretary of the Joint Planning Sub-Committee of the Chiefs of Staff Committee. His career almost terminated before it really began however, when, as a novice to the inner workings of the Government, he despatched his committee's report on the state of British defence forces, and on the imminence of war, to all members of the Cabinet including the Prime Minister. After surviving this small crisis, Hollis' next assignment was to find and equip a Cabinet war room which would serve the Cabinet, Chiefs of Staff and their immediate staff even if the houses above or about were demolished. So the "Hole in the Ground" came into being. From here Churchill was to direct the war.

In every chapter Leasor throws fresh light on the personality of the man Churchill. Before France fell when the weather threatened to prevent Churchill flying to France to confer with the remnants of French authority, Churchill retorted to an advisor, "This is too serious a situation to bother about the weather." He went. The reader is given an inside look at some of the stormy Cabinet meetings, at the conflict in personalities between Beaverbrook and Bevan, at the incessant demands from all departments for resources and manpower which did not exist. Often Churchill had to make peace between his principal lieutenants.

Throughout the war Churchill had a continual battle with his Chiefs of Staff. Perhaps his Chief of the Imperial General Staff came under the greatest fire; whereas Churchill was pressing for second fronts taking the offensive, attempting a raid somewhere to take pressure off the Russian front, Sir Alan Brooke, the CIGS, was worrying about a possible invasion of the British Isles. When Churchill pressed to replace Auchinleck in the desert because he refused to renew the offensive, the CIGS interposed on his field commander's behalf. Restraint was often mixed with advice.

The question of the Second Front was probably the biggest political and military issue at the conference table. To Joseph Stalin the Western allies were

procrastinating; to him it was not a question of how or why, but when, and why not sooner. General Marshall, described as a master of logistics, pressed for an invasion of France in 1942, as though troops could walk across the channel. The main British objections were simple: they lacked air cover and ships. General Eisenhower appears early in the book and is described not as a strategic man, or as a planner, nor as one who could initiate strategy, but as a very able conciliator; he took advice from everyone, but the final decision was always his own. It is unfortunate that Eisenhower is not given a more prominent part in the book, as he is the only war leader who is still active in public life. Montgomery proves himself to his critics as a general when, upon disagreeing with invasion plans, he retired to his rooms to write a revised plan. The typewriters sounded till dawn. Later in the morning Montgomery presented his plan.

As Leasor moves along in his book from battle area to conference table, mixing narrative with descriptive anecdotes, he brings out the human qualities of the people who directed the affairs of World War II. Always Churchill was thinking of the one million graves that remained from World War I. With penetrating foresight he attempted to forestall Stalin's plans to encroach on Western Europe. Roosevelt on the other hand followed a policy of being the intermediary between Russian and England – American policy was "to make the Russians trust us" even though British throats were cut in the process. In the end, both American and British throats were severely nicked.

War at the Top shows that the decisions which appear in communiques do not arise from mathematical deduction – rather they come from the emotion of debate, strength of personality, force of character, the consequences of action or inaction, and the analysis of the intent of both your allies and your enemies. The destiny of nations is indeed shaped much more by minds than by deeds or hands.

WAR AND THE SOVIET UNION

By H. S. Dinerstein (268p., Praeger, New York, 1959, $6.50)

Reviewed by WING COMMANDER JOHN GELLNER

IT HAS been said that he who maintains that he knows what the Soviet leaders' thinking is on a particular subject is either a knave or a fool, or both. Being uncontrolled by either parliament or public opinion, Soviet policies are indeed enigmatic. The best that an outsider can do is to draw inferences from the words and the actions of prominent personalities in the U.S.S.R. and thereby try to reach the highest possible degree of probability in his appraisal of official Soviet thinking and of Soviet intentions.

H. S. Dinerstein's book is just such an exercise in inductive reasoning. It is an attempt to get at the Soviet military concepts through a minute study of the Russian military literature – luckily for the author and his ambitious project, the richest in the world – and of the pronouncements of political leaders and of chieftains of the Soviet armed forces. The result is a series of hypotheses which, according to whether we do or do not consider the author's evidence conclusive, we may or may not accept as the current Soviet theory of war.

The consciousness with which the author has sifted the evidence and the intellectual discipline which he has imposed upon himself in the drawing of his inferences are altogether admirable. As a result, he makes out a highly convincing case. Only rarely does he allow himself the luxury of indulging in pure speculation – as when he tries to reconcile what he thinks is the acceptance by the Soviet leaders of the inevitability of the use of nuclear weapons in any future war with the fact that the U.S.S.R. is maintaining huge ground forces – and even on these occasions his argumentation is persuasive.

On reading Dinerstein's book one is immediately struck by the obvious preoccupation of the Russians with the basic laws of war. What a difference, for instance, between the pragmatic approach to military problems generally adopted in the West and the spirited and highly theoretical debate, conducted in Russian professional publications over a period of two years, on the relative influence on the outcome of wars of the "permanently operating" as against the "transitory" factors! We are wont to quote Clausewitz, Jomini and the other great theoreticians of the military science without really giving much thought to their teachings. In Russia, their doctrines are still being analysed, and adapted to modern conditions of warfare.

Those who in the Soviet Union conduct such studies are practically all professional officers — there, the soldiers have not surrendered to the social scientists, economists, history professors and journalists the field of military theory as we have done in the West. Contrary to the Western practice of discouraging officers from venting their professional opinions on the rostrum and in the press, Soviet officers have a variety of platforms whereon to voice their views on military matters.

This, of course, is quite a recent departure from what used to be the rule in Stalin's times. For the last 25 years of the late dictator's reign Soviet officers were severely muzzled. They thereby became the automatons who, with a few bright exceptions, fumbled through the wars against Finland and against Germany. In this stale period in Russian military thought Marxian determinism was made into the dogma of the inevitable superiority of socialist over capitalist arms. The former supposedly were bound to win every time, perhaps because they were like Sir Galahad:

> My strength is as the strength of ten,
> because my heart is pure.

It is only since 1953 that the minds of the Soviet officers seem to have been freed from the shackles of this primitive and barren outlook.

Among the things which we may quite profitably learn from the Russians — and which Mr. Dinerstein brings out very clearly indeed in his book — is their positive attitude toward the problem of survival in a nuclear war. They believe that active and passive defence can reduce human and material losses to a point from which recovery is possible. They reject the notion, so prevalent here and so often used as justification for inaction especially when it comes to civil defence, that nothing can be done when thermonuclear weapons start coming down, and thus that nothing need be done.

It is obviously impossible in the narrow framework of a book review to even touch on all the principal lessons which emerge from so scholarly a work as Mr. Dinerstein's. Merely to read such a book will not do. It must be carefully studied and critically weighed. The final conclusion arrived at by the author should be mentioned, however, because it contains the main reason for the political successes scored by the U.S.S.R. in these past years: "The guiding Soviet principle is readiness to fight any kind of war in the most effective way, no matter what the relative likelihood of the different kinds of war". Such readiness is expensive and can only be achieved by dint of heavy personal sacrifices on the part of the citizenry. The Soviet leaders do not hesitate to exact these sacrifices because they know that only thus, not by reliance on nuclear bombs alone or ICBMs or any other shortcut to military preparedness, can real muscle be put into any foreign policy.

THE COMMONWEALTH IN THE WORLD

By J. D. B. Miller (304p., Duckworth, London, 1958, $5.50)

Reviewed by PROFESSOR PAUL W. FOX

PROFESSOR MILLER'S book is of service to those who would like to learn more about this peculiar animal once called the "British Empire" but now known generally as "the Commonwealth". Most Canadians grow up with some notion of its essentials because their country had more to do with its development than perhaps any other nation. But our domestic books on the subject usually deal only with the Canadian aspect.

The great virtue of Professor Miller's work is that he takes a broad approach and tries to explain what the Commonwealth is. As an Australian domiciled in a British university, he is admirably suited to make the attempt, and on the whole he succeeds well. Thus he describes at some length the different attitudes of the United Kingdom, Canada, India, Australia, New Zealand, and South Africa, but he offers less on the views of those states which have come into the club recently as full members, Pakistan, Ceylon, Malaya, Ghana, Nigeria, and the Federation of Rhodesia and Nyasaland. The note on the position of the new West Indies Federation is only a page and a half long.

In true Australian fashion Mr. Miller does not hesitate to give us the benefit of his own opinions, and that makes for interesting and lively reading. Thus in dealing with the problem of terminology, he is all for dropping the words "British Empire" and even "British" Commonwealth because they no longer fit the situation accurately and only arouse prejudice. It would be out of character for Canadians to quarrel with this position since Canada,

under both Liberal prime ministers like Laurier, King, and St. Laurent and the Conservative premier Borden played a major role in bringing about the change from an "empire" to a "commonwealth", the term which has been employed normally since 1948.

Giving the essentials of the history of this transformation briefly but skilfully in thirty pages, the author then turns to the more difficult job of explaining what the Commonwealth is today. Here he clears up a number of confusions which must bother a good many outsiders (and maybe insiders too), for the Commonwealth is a remarkable conundrum: a group of autonomous nations spread over the face of the earth embracing peoples of different races, colours, religions, and interests, bound together loosely under the symbol of a crown though some of them are republics. How diverse and self-contradictory can an institution be and still survive? As Professor Miller points out, it is hard to even discover a word to define the Commonwealth: it is no longer an empire, it is not a federation, union, or community, it is not even a formal alliance. It is an illogical growth which though it makes little sense on paper is eminently sensible in fact. Unique in the history of the world, it seems to be the product of the typical British genius for constructing workable political systems by accident, compromise those favourably disposed would call it, muddling through the less enthusiastic would say.

The author's conclusion is that the Commonwealth is "a concert of convenience". Members stay in it "because they consider it more in their interests to be in the Commonwealth than out of it." This is not a very profound observation, but it is as realistic as the Commonwealth is itself, and accurate. Every member wishes to preserve its connection with the United Kingdom for its own reasons. Canada, for instance, finds it useful in maintaining its independence of the United States; some of the other countries because they are part of the Sterling area, though the author thinks this is "a mixed blessing". The mainsprings of the Commonwealth can be defined as economic cooperation, "negative agreement" on certain issues (e.g. anti-communism), and active encouragement of association with Britain.

For these reasons, though the Commonwealth is primarily a British interest, the author believes it will survive and that Britain will continue her leadership – provided she does not commit another "stupidity" like Suez and take too proprietary an interest in the institution. It is on this last point that Professor Miller's stimulating book has aroused a good deal of discussion in the United Kingdom. Some Britishers argue that if there were no proprietary interest, there would be no Commonwealth.

This is a very helpful book for any one interested in trying to grasp the complexities of this phenomenon which is one of the major forces in international politics today.

THE IMPACT OF AIR POWER

By Eugene M. Emme (894p., D. Van Nostrand Co., Inc., Princeton, N.J., New York, London and Toronto, $12.50)

Reviewed by WING COMMANDER A. F. AVANT

STUDENTS of military and world affairs will read with interest this book *"The Impact of Air Power.* For here is a book which reviews the depth and breadth of this thing called Air Power; which begins with the birth of the aeroplane and traces its development through five decades to the satellites and sputniks which orbit about us; and which describes the impact that the aeroplane, as a tool of man, has had on the waging of war and peace, and of shaping man's destiny.

Over a span of ten years Dr. Emme has collected, edited, and grouped a selection of essays, articles, speeches and authoritative readings on air power – the aeroplane and its application. As one examines the index, such titles as "The Fundamentals of Air Power", "The Elements of Air Power", "The Development of Air Power", "Air Power and Future Wars" appear, as well as the names of authors such as Winston S. Churchill, Edward Mead Earle, General Guilio Douhet, Viscount Trenchard, Lord Tedder, General Power, Bernard Baruch, Henry Kissinger, to name a few. In this volume Dr. Emme presents for the reader a very extensive assortment of readings on subjects ranging from the use of the aeroplane in World War I to the impact that satellites may have on the world of tomorrow. Strategy,

doctrine, concepts, defence policy, national security, diplomacy – these and many other subjects are discussed and related to air power.

The contents of the book are grouped into three sections: the first part traces the evolution of air power and describes some of its characteristics; the second part is a mixture of impressions from the past and conjectural theories on the future; the third part relates air policies to national security, outlines some problems of defence and diplomacy, and devotes a few pages to astronautics, the science of space travel. Each chapter, of which there are twelve, is prefaced by an introductory essay, which in addition to preparing the reader for the succeeding selections, provides transition and continuity of thought between the chapters. At the end of each chapter is a list of selected reference reading, books, articles and bibliographies for the reader who wishes to do further research or study.

For the reader who wants to trace the development of air power, the first two chapters will take one through the early years of flight, when the aeroplane was a military secret; World War I, when Winston Churchill as State Secretary of the Admiralty directed that "a squadron of aeroplanes will be established at Hendon . . . for the purpose of attacking aircraft which may attempt to molest London"; 1932, when Prime Minister Baldwin made his prophetic statement that "the bomber will always get through"; World War II, when Franklin Roosevelt proposed a production rate of 50,000 aircraft per year, when Churchill paid tribute to the fliers of the Battle of Britain, and when Harry Truman announced the dropping of the first atomic bomb. Here also are writings which define air power. General Billy Mitchell said, "Air power may be defined as the ability to do something in the air"; Dr. Possony lists fifteen elements of air power each of which is indispensable.

For the reader who wishes to study some theories of air warfare, or to examine the uses of air power and some of its lessons, the next five chapters review some of the writings of Douhet, the doctrine of the German Air Force as set out in 1935, the development of United States Air Doctrine during the years 1917-41, some statements by Seversky, the air war over land and sea in World War II, Korea, and they outline some thoughts on future warfare.

The remaining five chapters dwell on broader issues. Discussed are Soviet air policy and strategic concepts; atomic blackmail and a controlled war concept; United States Air Force policy, with statements by President Eisenhower proposing open skies reconnaissance. Several articles by eminent U.S.A.F. generals are included. An article by Sir John Slessor relates Air Power to world strategy, while British White Papers place greater dependence upon guided missiles than upon manned aircraft in British military forces. In the Far East a radically different set of conditions demands radically different policies. Dealing with problems of Defence and Diplomacy, two particularly good articles are included; an excerpt from Dr. Kissinger's *Force and Diplomacy in the Nuclear Age* discusses such subjects as atomic blackmail, the role of force, nuclear stalemate, graduated employment of force and the impact of United States policy on uncommitted nations; *Changing Strategic Outlooks* by Dr. Bernard Brodie discusses the shift in strategic thinking from a military context, to a wider one which is predominently political and social. The last chapter includes some pertinent articles on astronautics and the future. Will society be able to accommodate the technical advances of science and turn them to peaceful benefits, or will the conflicts between nations lead to the annihilation of mankind? This will be our preoccupation in the years ahead.

This book is indeed a "must" for the professional sailor, soldier, or airman to enable him to better understand air power in all its manifestations.

SOVIET SPACE SCIENCE

By Ari Shternfeld (346p., Basic Books, New York, $6.00)

Reviewed by WING COMMANDER F. N. SHEFFIELD

WITH the launching of Sputnik I in October 1957 by the U.S.S.R., discussion of the age of space travel moved from the comic pages to the front pages of our newspapers. Much of the discussion centered around the military significance of the first successful satellite launching and the feat was heralded as a great propaganda victory for Russia in its power struggle with the U.S.A. In addition, the launching was reported to be a great surprise and much was written to the effect that

technological advances were being made in Russia without the knowledge of the West.

The launching of Sputnik I should not have come as a surprise to any informed reader because widely published writings on astronautics (the science of flight in cosmic space) had, for decades, given evidence of the imminence of a satellite launching. Sputnik I may well have been a propaganda triumph for Russia but in truth it was a tremendous triumph for the world-wide group of astronauts who had been striving for years to perfect and launch a vehicle to explore outer space.

Soviet Space Science which has recently been translated from Russian by the United States Air Force records the tremendous effort that has been required to develop artificial satellites to their present state of usefulness. It is not just a story of the launching of the first successful satellite, it is a systematic recording of the theory, construction, control and uses of present and future satellites. An understanding of the entire field of astronautics can be gained from a perusal of this book. Although *Soviet Space Science* is easy to read, it must be described more as a textbook or reference book on astronautics rather than a document for casual reading. The complete and detailed account of the various aspects of space flight demands the close attention of the reader.

The author, Ari Shternfeld, has been writing on astronautics for over 25 years and *Soviet Space Science* attests to the intimate knowledge he must have of the whole field. It starts with an explanation of the Laws of Motion of Artificial Satellites, then leads the reader step by step through such chapters as Rocket Engines, Man in Cosmic Space, Return to Earth, and Trips to the Moon, and concludes with a chapter on the Scientific Uses of Space Ships. Some mention is made of the military application of artificial satellites but the book is concerned with the scientific uses of the vehicles. Mr. Shternfeld concludes his book by stating that the many unresolved problems of space flight "can, despite their complexity, be solved if the contracting parties approach the subject with good will, and under the conditions that artificial satellites shall be used only for peaceful scientific purposes".

Soviet Space Science is free from the propaganda that we are led to believe characterizes Soviet writings and provides evidence that we should devote more time to the translation of Russian writings, particularly in the scientific field. For those who wish to or must have a more detailed knowledge of space flight this complete book is an excellent publication. It is of particular value to the military student who must keep pace with today's rapid technological advances.

OTHER BOOKS RECEIVED

The limitation of space prevented inclusion of a review on these books received from publishers:

The Yellow Wind. By William Stevenson. London, Cassell and Co., 1959, 374p., $7.00.

Man in Space. Edited by Lt.-Col. Kenneth F. Gantz, U.S.A.F., New York, Duell, Sloan and Pearce, 1959, 303p., $4.50. (Published in Canada by Longman's, Green and Co., Toronto.)

In Canadian Skies. By Frank H. Ellis. Toronto, Ryerson Press, 1959, 230p., $5.00.

Airborne From Edmonton. By Eugenie Louise Myles. Toronto, Ryerson Press, 280p., $5.00.

A Sky of My Own. By Molly Bernheim. Toronto, Clarke, Irwin, 1959, 252p., $4.75.

The Failure of Atomic Strategy. By F. O. Mikscke. London, Faber and Faber, 1959, 224p., 25s. (Published in Canada by British Book Services (Canada), Toronto.)

Nautilus 90 North. By Cmdr. William R. Anderson, U.S.N., Cleveland, World Publishing, 1959, 251p., $3.75.

There Shall Be Wings. By Leslie Roberts. Toronto, Clarke, Irwin, 1959, 290p., $5.00.

Between Earth and Space. By Clyde Orr, Jr. Galt, Brett-Macmillan, 1959, 253p., $4.95.

The Logic of Scientific Discovery. By Karl R. Popper. New York, Basic Books, 1959, 480p., $7.50. (Published in Canada by Thomas Nelson and Sons, Toronto.)

Massive Retaliation. By Paul Peeters. Chicago, Henry Regnery Co., 1959, 304p., $6.50. (Published in Canada by S. J. Reginald Saunders, Toronto.)

Movements of Political Protest in Canada. By S. C. Clark. Toronto, University of Toronto Press, 1959, 518p., $6.50.

Advertisers' Index

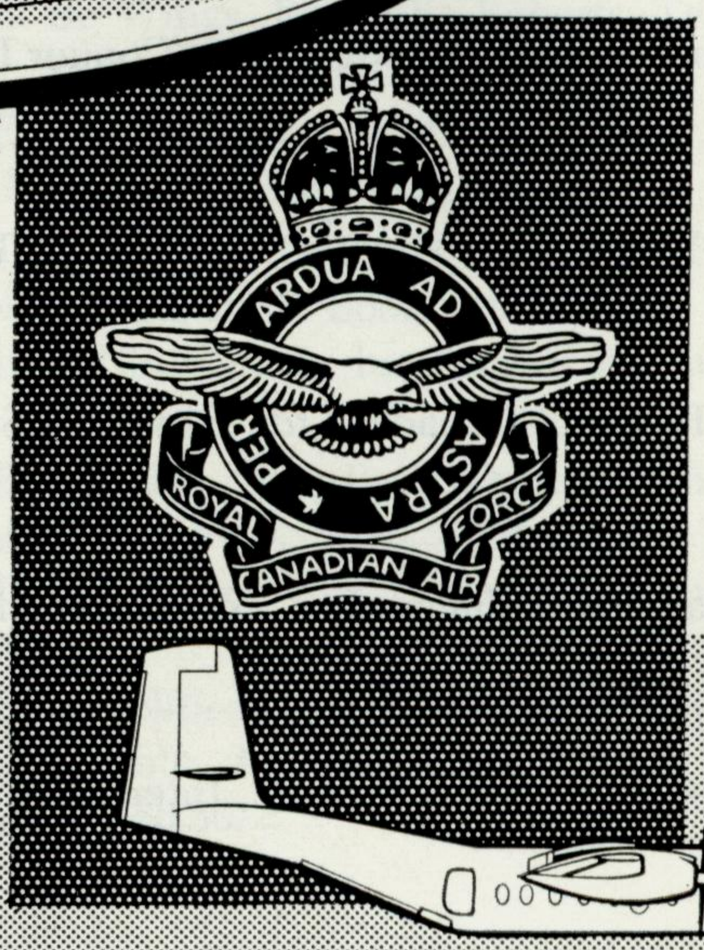
	Page
Aviation Electric Ltd., P.O. Box 6102, Montreal, P.Q.	5
Avro Aircraft Ltd., Box 4004, Terminal A, Toronto, Ont.	51
Bata Engineering, Batawa, Ont.	43
Bristol Aero-Industries Limited, 200 International Aviation Bldg., Montreal 3, P.Q.	127
Canadair Ltd., P.O. Box 6087, Montreal 3, P.Q.	84
Canadian Applied Research Ltd., 1500 O'Connor Dr., Toronto 16, Ont.	58
Canadian Aviation Electronics Ltd., P.O. Box 915, Station "O", Montreal 9, P.Q.	128
Collins Radio Co. of Canada Ltd., 11 Bermondsey Rd., Toronto 16, Ont.	58
De Havilland Aircraft of Canada Ltd., Postal Station "L", Toronto, Ont.	126
Garrett Manufacturing Corporation of Canada Ltd., 4 Racine Rd., Rexdale, Ont.	4
Hunting Associates Ltd., 1450 O'Connor Dr., Toronto 16, Ont.	52
Northwest Industries Ltd., Municipal Airpower, P.O. Box 517, Edmonton, Alta.	2
Rolls-Royce of Canada, Ltd., Box 1400, Station "O", Montreal 9, P.Q.	50
Standard Aero Engine Ltd., Stevenson Airport, Winnipeg 9, Man.	3
Trans-Canada Air Lines Ltd., International Aviation Bldg., Montreal, P.Q.	1

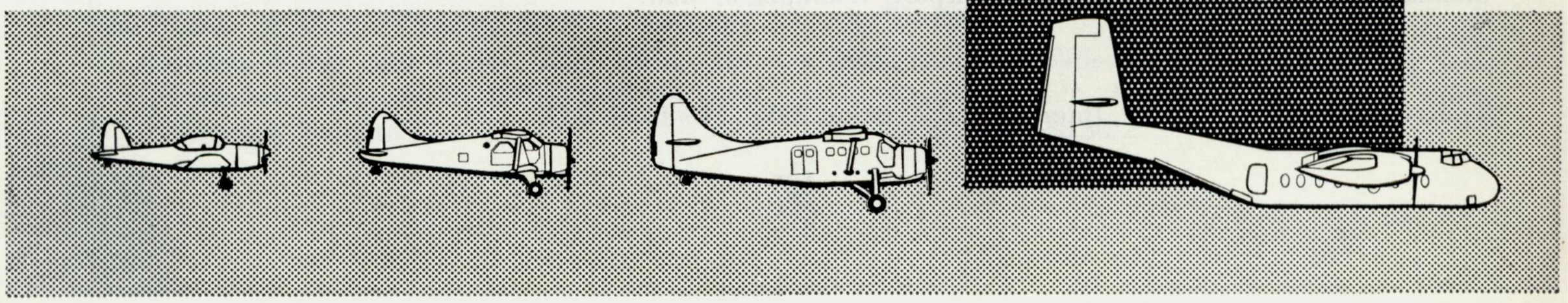
Happy Birthday

ON THE 35th ANNIVERSARY OF THE R.C.A.F.

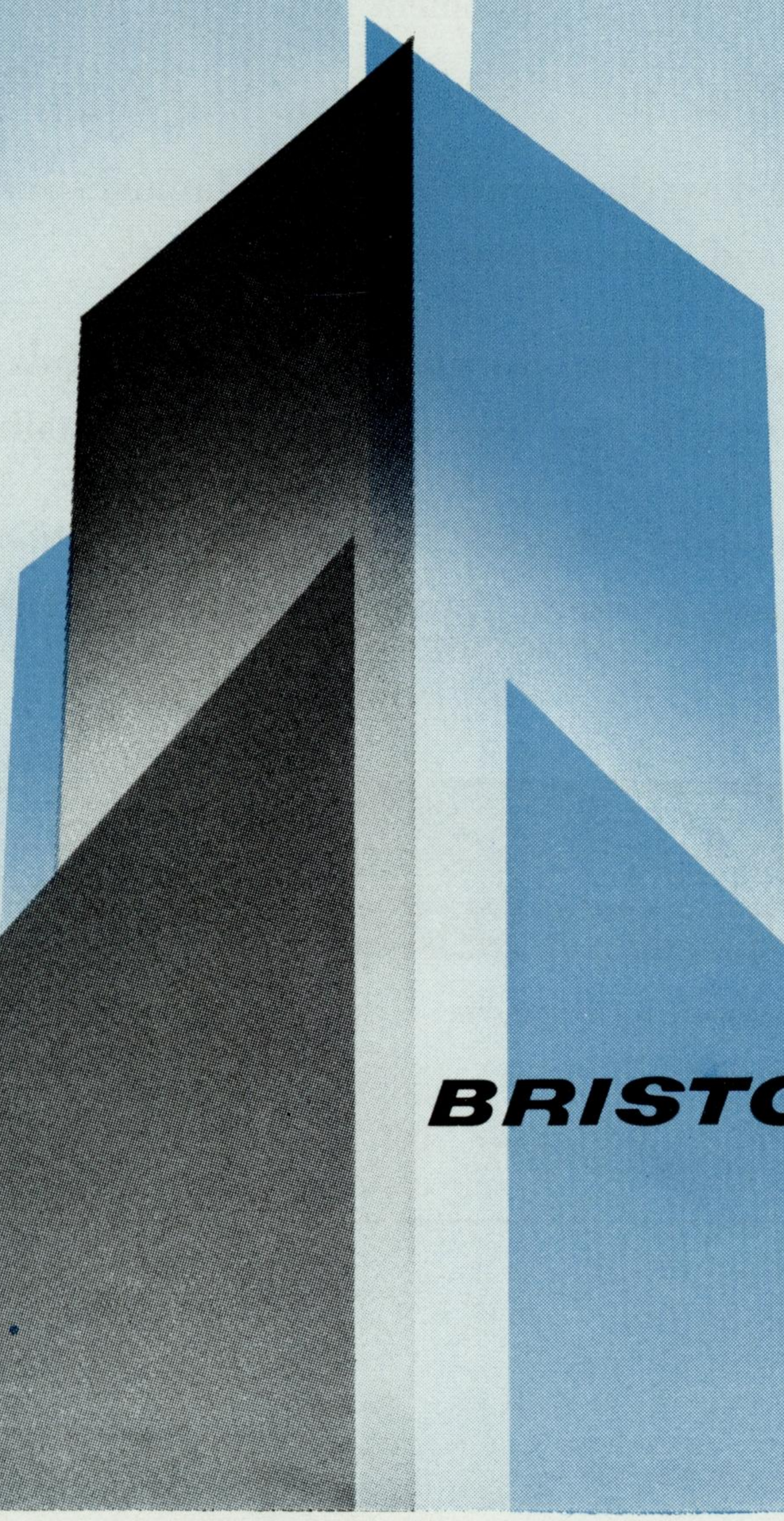


FROM ALL OF US AT DE HAVILLANDS





Bristol and Canada's Missile Program...



Backed by the guided missile experience and resources of the Bristol world-wide organization, Bristol Aero-Industries can make an effective contribution to Canada's weapons systems programs and research activities.

Bristol's Winnipeg Division, with complete production and laboratory facilities, is able to undertake design, development and manufacturing projects.

In addition, Bristol provides consultant and technical assistance services as well as facilities for chemical, metallurgical, mechanical and environmental testing.

BRISTOL AERO-INDUSTRIES LIMITED

MONTREAL WINNIPEG VANCOUVER

cae the largest Canadian owned electronics company, has, since it was founded, provided the R.C.A.F. with both products and service facilities.

Among these are:

- Development and manufacture of flight and weapons simulation
- Manufacture of airborne fire control equipment under license from Hughes Aircraft Company
- Design, development and manufacture of electronic electro mechanical equipment and special purpose test equipment
- Repair and overhaul contractors for radar and armament systems and telecommunication equipment
- Management of western sectors of the Mid-Canada Line, maintenance of Pine Tree and other radar installations
- Manufacture of automatic multi-channel projection plotting equipment under license from Fenske, Fedrick & Millar Inc.

cae
Canadian Aviation Electronics, ltd.,
P.O. Box 2030, Station O, Montreal 9, P.Q.

Offices in: WINNIPEG and VANCOUVER.

R. C. A. F.
STATION LIBRARY
Trenton, - Ont.

