OVERNMENT OF CANADA

STATEMENTS AND SPEECHES

INFORMATION DIVISION
DEPARTMENT OF EXTERNAL AFFAIRS
OTTAWA - CANADA

No. 59/32 CANADA'S DEFENCE PROGRAMME

A statement by Mr. George R. Pearkes, Minister of National Defence, in the House of Commons on July 2, 1959.

... While I realize that in the time at my disposal I cannot cover all facets of defence, it is appropriate now to make some general remarks on our defence thinking. There are a number of factors that must be considered in introducing these estimates. The requirements deemed necessary for defence today will almost certainly be outmoded a few years from now. This, of course, is not solely a Canadian problem; it is a problem facing every country today. In our endeavours to solve it we should be ready and willing to consult with our partners in Europe and on the North American continent.

We must also be prepared to take advantage of our collective agreements so we can provide a better and more lasting peace within our economic limitations. By co-operating with our allies we are able to have an integrated, balanced force among all the allies, rather than attempting to have a balanced force within each nation. It has been obvious for some time that no country can stand alone or can plan its defence in isolation.

This is particularly true of Canada. Our geographic position and our varied interests require us to take part in collective defence. Therefore, when planning a defence programme we have to take into account many considerations, such as the changing threat which is brought principally by rapid developments in the technological field, particularly in the area of offensive weapons introduced into the armament inventory of a potential enemy, and also the very long time required to develop and produce modern defensive weapons systems and the ever-increasing costs of research development and production.

A full appreciation of the concept of modern war, which might come without warning, requires our forces to be trained, equipped and immediately ready for operations. Gone are the days when a protracted period of time might be devoted

to mobilization and the conversion of industry from a peace to a war footing. I have discussed the threat on previous occasions, but as all our preparations are linked with the appreciation of the threat it is perhaps worth while emphasizing some of the aspects of this part of our defence problem.

The evaluation of the threat cannot be completely reliable, since development of ways and means of waging war is of necessity one of the most closely guarded secrets of any country. In fact the record shows that there has been a tendency in the past to underestimate the achievements of the Soviets in this particular field. They have been particularly successful in concealing their intentions. However, the best assessment that we can make of the type and scale of attack against this continent is roughly as follows.

Nature of Possible Attack

For the present and in the immediate future the principal attack against North America would be by a relatively small number of long-range manned bombers carrying megaton weapons. These might well be augmented by a large number of medium bombers on one-way missions carrying nuclear weapons of varying yields. Russia might not care if she had to jeopardi these one-way mission bombers. In the early 1960's it is expecte that the ballistic missiles will have reached a stage of reliability whereby such missiles will replace the bombers as the primary means of delivering nuclear weapons on North America. However, if an attack on this continent is made in the early 196 it is considered quite probable that a variety of weapons would be used in an effort to saturate the defences and thus deliver a devasting attack.

This kind of attack would include ballistic missile both long and short range, land based or from submarines, as wel as other nuclear weapons delivered by aircraft. As most of the major strategic targets are situated in the United States it is more than likely that certain targets in Canada would be attacke by bombers, although the primary threat would be from the ICBM's.

It is not possible to say with any degree of accura when the ICBM will be available in sufficient numbers to take on all the targets in North America, or when we can completely dispense with the requirement for defence against the bomber. I other words we believe we may have to face a combination of weapons, some delivered as ballistic missiles and others from manned bombers. Thus the possibility of attacks on Canada by manned bombers may extend into the mid-1960's, although the thre compared to the missile, would be on a diminishing scale.

Research and Development of Defence Equipment

The next point to mention is the lead time necessary and the risk involved in research and development of modern weapons systems. In giving evidence before a congressional committee this year the United States Secretary of Defence, Mr. McElroy, said:

> We are living today in an era of extremely rapid advances, in science and technology. Some of the programmes which appeared to have had great merit only 12 months ago, now, in view of the progress made on more technically-advanced projects, no longer have the same importance or urgency.

We know that having started upon certain projects these have had to be cancelled before they were completed because of changed circumstances. From a study of research and development in the production of modern defensive equipment in the United States and the United Kingdom, and from our own limited experience, it is clear that it takes about nine or ten years to develop and produce modern highly sophisticated defence equipment. The cost of this development and production is becoming astronomical, and there is always the risk that the end product may arrive too late, that new methods have overtaken its development or that the enemy threat has changed considerably.

As an example of the costs and complexity of these development problems it was shown in the evidence produced before the United States Congressional Committee this year that the Bomarc missile has been under development for over eight years and has cost so far $1.9 billion, while some $3.7 billion has been expended on the Nike-Ajax and the Nike-Hercules missiles.

It is clear that a country the size of Canada cannot embark unilaterally on any of these long-range, technical and costly development programmes. We must of necessity take advantage of our position in the Western alliance and be able to obtain proven equipment from our partners to meet our limited requirements, thus avoiding the exorbitant cost of development and the risk of failing to produce the weapons in time to meet the threat. Thus, we are pursuing a policy of production sharing, the details of which have already been communicated to the House by the Minister of Defence Production.

Earlier I mentioned the changing threat and expressed some doubts as to whether or not we are in a position to forecast accurately this threat either in time or in character. This dilemma is further exaggerated by the trend of future development, which indicates a much more rapid technological advance in the weapons of offence than in the defensive type. It may be said with some degree of certainty that the weapons available in the next

few years can produce total destruction, but the defence against these weapons is a different story and that causes us great concern. This is one of the matters to which all members of the alliance must devote a great deal of attention.

As has already been announced, the Defence Research Board is working with the United States authorities in solving some of these problems of defence against ballistic missiles. These are problems in relation to tracking ballistic objects in and beyond the atmosphere. Some progress has been made in the field of detection of missiles, and a comprehensive communications system is being installed to give warning of the approach of the ballistic missiles. These detection stations to which I refer are not located in Canada, although Canada is providing facilities to assist in the communication and passing on of the information. It is expected that by 1961-62 a reliable detection and warning system will be in operation on the North American continent, but this is only one aspect of the problem.

The major question to be answered is how to intercept the ballistic warhead and destroy it before it reaches its target. This is a research and development project of very great technical and financial proportions, as these missiles will be travelling at several thousand miles an hour. The whole question of locating, tracking, intercepting and destroying the missile must be accomplished within the time of flight of the missile which may be as short as 15 or 20 minutes. The United States have given this project first priority and are putting a great deal of effort and money into a programme of defence against missile attack, but it appears unlikely that a satisfactory means of intercepting and destroying the missile will be accomplished within the next few years. In consequence, there may be a period between the time when the ICBM is available to a potential enemy and the time when some defence against the ballistic missile is possible.

As present there is no defence against the missile after it has left its launching pad, and several years may elapse before such a defence is operationally practical. Therefore this gap in our joint defence must be considered most carefully in our defence planning and in the steps we are taking to ensure our survival if unfortunately we are forced into war during this interval.

In view of the consequences of nuclear war the world is perhaps approaching the stage when the use of force as an instrument of policy to settle man's differences is no longer valid. It is hoped that some other means than armed conflict will eventually be found to settle international disputes. To this end we have demonstrated our willingness to lend assistance in order to help reduce tension in potentially explosive areas, thereby preventing the exploitation of force as an instrument of policy. Our troops assigned to the United Nations Emergency Force and to other peace-preserving teams are continuing examples of our interest in this direction.

Until general agreement on disarmament is reached, however, we must support the maintenance of an adequate deterrent to war to make it quite apparent to any would-be aggressor that he cannot use force as an instrument of policy without running the risk of devastating retaliation. It is necessary, therefore, for us to maintain our forces both here and abroad as part of the deterrent of the West. It is our fervent hope that these two primary elements of defence policy will succeed and that war will be averted. However, there is an element of miscalculation and misunderstanding that cannot as yet be removed from international relations; therefore it is prudent that these deterrent forces should be so designed that they will be of use to blunt any attack and to assist in survival.

Defence Policy

With these observations in mind I would now refer to Canada's defence policy. This policy was set forth in the paper on defence tabled at the end of April. This paper is intended to assist hon. members during these discussions. Anyone who has read it should have a better understanding of our policy and the state of our forces. The paper is not intended to be the instrument through which major new policy is announced. During the year changes in policy and the procurement of new equipment have been communicated to the House as decisions have been reached. The effects of these decisions are reflected in the estimates now before the Committee, and are detailed in the report.

The Committee will be aware of some of these important decisions, all of which, have been announced or referred to in the House during the past year; for example, the cancellation of the Arrow programme, adoption of the Bomarc missile and related semi-automatic ground environment; the acquisition of a surface-to-surface missile for the Canadian army; negotiations for the procurement of nuclear weapons announced by the Prime Minister on February 20 of this year; construction of six additional destroyer escorts; plans for a tanker supply ship to increase the range of the destroyer escorts and thus enable these ships to stay at sea for longer periods of time, and the granting of facilities at four Canadian air fields for SAC refuelling aircraft; the tasks assigned to the Canadian army with respect to survival operations and civil defence. Had a policy of withholding this information been followed and the first announcement given in the white paper it would indeed have been a sensational document.

The format of the report is not intended to copy what is known as a British white paper, although the latter does not always announce new policy. It will be recalled that in 1957 a so-called five-year plan was announced by the British Government with regard to defence. The details of this plan were, in general,

already well known in that country prior to the publication of the white paper. The British report on defence in 1958, however, had the following introductory remark:

> This paper reports the progress made in implementing that policy.

That is, the policy which had been announced a year before. Recently another British white paper announced the details of some major changes and reorganization of the British army. No such changes have taken place here because they are not applicable to our organization.

In the report that I made available in April--and it is the type of report that requires some time to prepare--I endeavoured to set forth our defence policy, to outline how that policy was being carried out, to show the distribution of our forces and to explain briefly the estimates required for this financial year. Amidst all the verbiage that has been uttered since I tabled the report I can find but two or perhaps three points of criticism, and these all affect matters that require major policy decisions. I refer to the re-equipment of the air division in Europe, the defence against the manned bomber at home, and the defence against the ICBM of the future. I have already made mention of the problem of defence against the ICBM and I shall refer later to the defence against the manned bomber.

Air Defence

Hon. members will realize that a decision such as the re-equipment of the air division, involving not only millions of dollars but also our relations with our NATO allies, is not easily arrived at. At the time I tabled the report no such decision has been taken. Now, after the Government has had the opportunity of hearing the views expressed by General Norstad, the Supreme Allied Commander, Europe, and having taken into consideration many other factors including costs, I am in a position to announce that the Government has decided to re-equip the air division of the RCAF. The U.S.S.R. and its satellites have large, mobile and fully equipped forces deployed along the European border of Russia and in the territory between the Russian border and NATO Europe. These deployed and combat-ready Soviet forces would be capable of launching and sustaining for some time a major gound attack against NATO Europe. To prevent the overrunning of NATO Europe it would be essential to defeat enemy forces launching such an attack.

The mobility of enemy forces and the target-information requirements for the effective use of surface to surface missiles, with which the allies are now being armed, clearly indicate a need for aircraft which can penetrate the area between the combat zone and the Russian border for reconnaissance and for strikes on targets of opportunity such as advancing columns of troops.

The NATO military authorities have recognized this deterrent force requirement and have requested Canada to provide a strike reconnaissance aircraft contribution. This contribution requires an aircraft capable of flying at a comparatively low altitude at great speed in order that targets on the ground, either stationary or moving, can be located and attacked. While such action would only be taken after hostile ground forces had commenced operations in Western Europe, the presence of these aircraft in Europe would considerably enhance the value of the deterrent. The Government, therefore, has decided to re-equip the eight squadrons of the air division, now armed with the F-86 day fighter, with a strike reconnaissance aircraft. The four CF-100 squardons are continuing in their present role.

The F-86, although in service for a number of years, is still an effective aircraft; but if we are to continue to support NATO a decision had to be made as to the role the air division would play in the years ahead. Some two years will elapse before new aircraft will come into operational service, and by that time the value of the F-86 will have diminished in comparison with other aircraft in operation. Failure to take a decision now, therefore, would jeopardize the effectiveness of the RCAF's contrubution in the future and undoubtedly would cause serious alarm and harm to the Alliance. The decision now taken is in accordance with the recommendations of the Supreme Allied Commander and re-emphasizes the fact that Canada, as a member of the NATO Alliance, intends to continue to meet its agreed commitments as we have in the past, despite the heavy costs involved.

Provided the negotiations which are being carried on with the Lockheed Aircraft Corporation can be brought to a satisfactory conclusion in respect to costs, production sharing and other contractual terms, the aircraft selected will be the F-104G, a single-seater supersonic aircraft equipped with the J-79 engine. It is an advanced version of the F-104, which is now in service with the United States Air Force. Members of the Committee will be aware that this aircraft was also selected by the Federal Republic of Germany and will come into operation with the air force of the Federal Republic of Germany at about the same time as it will come into operational use with the RCAF squardons. In the meantime the German air force is taking into operational use the F-86. While the airframe and engine will be manufactured under licence in Canada, final details of production and costs will be announced by the Minister of Defence Production in due course.

The F-104G was selected as the most suitable after more than 20 types of British, American and European aircraft had been evaluated by the RCAF. Consideration was also given to the possibility of modifying existing Canadian aircraft with a view to converting these aircraft to carry out the new role assigned to air division. Such aircraft were developed essentially as fighter or interceptor aircraft, and were designed to engage hostile bombers

at great heights. The requirements for a strike reconnaissance aircraft do not demand long range and great height, but do call for the ability to fly fast at low altitudes. The two requirements are not compatible, and it was not deemed practical to adapt present aircraft to this new role. Past experience shows that to have attempted to design and build a new aircraft in Canada would have been prohibitive in cost and would have taken much longer to become operational.

I mentioned a few minutes ago that to understand the estimates one must know what our policy and commitments are. For the benefit of those who have not read "Defence 1959", I would quote from that paper:

> "Canadian defence policy derives directly from our foreign policy and is designed to ensure national security and the preservation of world peace....
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> These objectives are reached through collective arrangements within NATO and the United Nations. While the increased range of offensive weapons equipped with nuclear warheads brings the North American continent within the target area in any future war, it is realized that the defence of this area cannot be considered in isolation. The advantage, in collective defence within the framework of an Alliance such as NATO is that an integrated balanced force can be provided by each member nation concentrating on the provision of those elements which constitute its particular needs and can be most effectively maintained.
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> In order to meet the objectives of the Alliance and in support of the United Nations, it is the defence policy of Canada to provide forces for: The defence against an attack on the North American content; the collective defence, and deterrent forces of NATO in Europe and the North Atlantic; the United Nations to assist that organization in attaining its peaceful aims.

It should be understood that since the development of offensive weapons has not been matched by comparable advances in defensive technology, effective retaliatory forces are still the best and perhaps only defence. That is part of the concept of NATO.

If the deterrent is to be effective it must contain four basic elements. The free world must have forces in being, fully trained and immediately available for action. They must be so organized as to be able to repel and counter any attack. We must also have the will to build up and maintain those forces and the determination to employ them if circumstances warrant; and the potential enemy must be convinced of the strength of our forces and our willingness to use them if required. Some of the exaggerated statements regarding the obsolescence of some of our equipment have not been helpful in that respect.

While realizing that the main deterrent to war is the retaliatory forces, we must continue to maintain a good defensive posture. For one thing, we must protect the offensive forces, such as the SAC bomber bases, from destruction by a surprise attack. Protection against such an eventuality is one of the principal roles of our air defence forces on the North American continent. The aim of the Western alliance is, first of all, to deter the outbreak of war. Should this fail and an attack follow, we must be in a position to defend ourselves and to destroy the enemy's ability to continue to wage war.

I turn now to defence against the manned bomber. Despite the diminishing threat of the manned bomber in the years ahead, to which I have already referred, it has been considered sensible to maintain defences against such a form of attack on this continent. With the development of stand-off bombs launched from manned aircraft, it is imperative that the interception of such aircraft should take place as far distant from the target as possible. To accomplish this and to provide defence in depth, Canadian and United States interceptors would engage enemy bombers as far north as possible.

We are maintaining nine squadrons of CF-100 all-weather interceptors and are making arrangements so that United States interceptors can operate in Canadian air space, and consideration is being given to providing facilities so that United States aircraft may be able to operate from Canadian air-fields. Those hostile bombers that succeed in escaping these defences would then be engaged by a series of Bomarc units located close to the Canadian-United States border. In other words, we are concerned with area rather than point defence. The United States are providing some point defences at their key strategic bases, SAC bomber bases, by such missiles as the Nike-Hercules.

As we are participating jointly with the United States in the air defence of North America under NORAD, it is only good sense to equip our air defence forces with similar weapons so as to permit the most effective joint operation. The United States Air Force, faced with the same requirement for an area air defence missile, are developing the Bomarc as a weapon to complement the other elements of the defence system against bomber aircraft; the radar warning system is also being developed, interceptor aircraft and the semi-automatic ground environment.

Two Bomarc B units will be stationed in Canada, one near North Bay, Ontario, and one in northern Quebec, as part of a system protecting the heavily-populated areas of both Canada and the United States. The United States Air Force are now engaged in establishing their portion of the over-all system stretching from the Atlantic to the Pacific, with interlocking stations. While some changes in quantities have occurred as the system has developed, the first units will soon be operational.

The cost factor as far as Canada is concerned with regard to the Bomarc programme has already been demonstrated. As the result of a cost-sharing agreement with the United States, improvements to the Canadian air-defence system--and this include additional radar sites, gap-fillers for the Pine Tree system, Bomarc missiles and the SAGE electronic control equipment--amount to some $125 million, of which $20 million is for the Bomarc. This represents Canada's share in the new programme, the United States sharing the total cost of the programme on an approximate two thirds, one third basis. This compares, as hon. members know, to the estimated cost of $750 million if the Arrow programme has been continued until that aircraft was in operation. We are getting comparable defence for considerably less money.

Improvements to the air defence of Canada which have been announced include SAGE, one of whose functions is to provide instructions automatically to the Bomarc missiles and to the interceptors, be those interceptors RCAF or United States aircraft; the modification of existing radar stations to make them part of the SAGE complex; seven new heavy radar stations and a number of gap-filler stations to be added to the Pine Tree line. These increase materially the effectiveness of our defences. Each of the seven new heavy radars will be manned by RCAF personnel. Construction will get under way shortly at Moosonee, Ontario, and Chibougamau, Quebec. Preliminary investigations are being carried out for five western radars. When completed each station will be manned by approximately 250 RCAF and civilian personnel.

It might be of interest to hon. members to know that since the decision was made that Canada would adopt SAGE, the first unit has begun successful operation in the north-eastern United States. The version of the system to be installed in Canada will be a later development; its electronic computers will make use of transistors rather than the less efficient and bulkier vacuum tubes. In order to "harden" the SAGE centres, the Canadian unit will be constructed underground.

Threat from the Sea

The major threat to Canada from the sea continues to be the submarine. The Royal Canadian Navy and the Maritime Command of the RCAF are being organised equipped and developed so that in close co-operation they can cope with the primary task of locating the destroying submarines. Since there is at present no means of destroying a missile once it has been launched, it is most desirable that missile-carrying submarines be kept as from our shores as possible so that targets ashore are beyond the range of the submarine's weapons. Our ships and marine aircraft are designed and equipped for this purpose.

On each coast a maritime commander has been established who exercises unified operational control over RCN and RCAF forces in his area of responsibility and maintaines direct liaison with adjacent NATO and national commanders.

To improve our anti-submarine capability and to simplify logistic and training problems, the navy has transferred all the new St. Laurent class escorts to the West Coast, while the Restigouche class escorts will be stationed in the Atlantic Command. Of the original seven Restigouche class escorts, five are now in commission and the remaining two, Columbia and Chaudière, will be commissioned by the end of this year. These ships, together with the Argus aircraft of the RCAF Maritime Command, form an effective hunter-killer and anti-submarine team whose effectiveness increases as new and more advanced equipment is introduced.

To replace Second World War escorts a construction programme for six repeat Restigouche escorts has been commenced. Work has already started on the first of these ships, a second will be laid down this month and the remainder will follow at approximately three month intervals.

National Survival Role

Another aspect of the defence of Canada is the survival role to be carried out by all regular and reserve forces not directly involved in operational duties in the event of war. With the advent of the ICBM we do not pretend that we can ensure a complete defence of North America. Therefore the Government feels that it is prudent to give more thought and consideration to the passive measures of defence which may have to be adopted should our efforts fail to prevent war. With this in mind the regular and reserve forces have been organized for survival operations. All defence forces which are not actively engaged in repelling the attack will be trained and ready to take active measures to assist survival.

An Order in Council known as the Civil Defence Order, 1959, has been approved by the Governor in Council and tabled in the House of Commons. This Order has given the Department of National Defence various civil defence powers, duties and functions which will provide for a system of warning the public of attack, determining location of nuclear explosions and fall-our patterns, assessing damage and casualties, re-entry and rescue. The Department of National Defence will be responsible for all re-entry operations in seriously damaged or contaminated areas. The Department has also been given the tasks of providing emergency support to provincial and municipal authorities for the maintenance of law and order and the maintenance and operation of emergency communications facilities.

The Canadian army is the designated service responsible for the conduct of survival operations, and will be assisted by such elements of the RCN and RCAF as can be made available for this task. A Director General of Survival Operations

has been appointed to head the army organization which will be responsible for the role which was first referred to in the defence report issued in April.

In the event of attack on Canada, communication with all parts of the country would be essential. In consequence, arrangements are being made to ensure that if the main communication facilities should be interrupted, alternative means will be available.

On September 1 the Department of National Defence will assume full responsibility for the operation of the warning system in Canada. This will involve obtaining the information from the appropriate source and transmitting the warning in the shortest possible time to provincial authorities, probable target areas, military headquarters and installations, and all segments of population likely to be affected. Warning will deal with the threat of direct attack and will also provide information on location of nuclear explosions and resulting radioactive fall-out which may follow such an attack. Detailed studies are now under way aimed at providing the fastest and most effective system within our capability.

The Canadian army has organized a number of mobile support columns within the regular army and the militia. These columns will be based on major units and training establishments in the regular army. In the militia they will be based on groups of units. Each column contains rescue companies and such other elements as will permit them to perform re-entry and rescue tasks, as well as supplying manpower for maintenance of law and order and such other internal operations as may be necessary under conditions of war. Mobile support columns will be grouped into task forces.

Rescue training sets are being issued to these mobile columns. Provision is being made for additional equipment to be provided early in 1960. Requirements for communications equipment for national survival have been established and arrangements for procurement are being made on a priority basis. The requirement for radiation detection equipment has been established. Industry, however, is as yet unable to meet the standards in all cases. Action is being taken on a priority basis to obtain suitable equipment as it becomes available, and it is expected that substantial deliveries will be made this year. Some radiac equipment suitable for training has been issued.

Detailed examination of other items of equipment normally held by the army is being carried out with a view to providing adequate scaling for survival operations for all troops involved.

National survival training was introduced to all components of the Canadian army in 1957. Since then emphasis in training has been placed on rescue and radiation monitoring. To date over 750 armed forces personnel have received survival training at the civil defence college at Arnprior and over 1,000 at the joint atomic, bacteriological and chemical school school at Camp Borden. The army Commands across Canada have conducted numerous courses to provide instructors in rescue operations. Twelve simulated disaster areas have been constructed for practical training of instructors, and provision is being made for an additional 21.

Army Headquarters have prepared and issued training directives and provisional training instructions in all aspects of national survival training. These instructions will soon be incorporated in training manuals in both English and French. There have been numerous exercises conducted by both the regular army and the militia on national survival operations with encouraging results, and there can be no doubt that the forces have embarked on training for their new role with realism and enthusiasm.

In the context of what I have said the importance of research and development is more than ever apparent. In the present military environment and for the future, research has, and must continue to have a major role in defence planning. In fact our hope of survival may well rest in the hands of the defence scientist.

The Defence Research Board works in very close co-operation with our major NATO partners, and because of its contributions to the common pool of knowledge obtains much greater benefits than could otherwise accrue. Active projects in upper atmospheric physics, aerophysics and explosive physics are being conducted jointly with the United States in an effort to close the gap between offence and defence in the ICBM era. The Prince Albert radar laboratory is one of the facilities being used jointly by Canada and the United States.

High priority is also being given to problems of anti-submarine warfare, particularly in the field of detection and tracking of submarines. Both the naval and air aspects of this difficult problem are being considered. The Canadian programme is closely co-ordinated with the programmes of the United Kingdom and the United States. It is of interest to note that the British Admiralty has recently adopted a towed sonar developed by the Defence Research Board naval research establishment.

Apart from the major problem of defence against the ICBM and the missile-launching submarine, the Defence Research Board is carrying out research in many fields which are of vital importance to defence. Many of the projects are directly allied to air defence, nuclear warfare and survival.

The enormous speed of the ICBM requires split-second reaction time, long-range detection and tracking. All of this is beyond the manual capacity of the human being. There is a continuing effort to develop fast, long-range and automatic devices for detection, tracking and computing. These must be reliable and work at speeds far beyond those of which the human mind is capable of reacting. Operation must often be by remote control by means of electronic devices.

Electronics play a major part in a modern military force. There is a constant seeking to develop more reliable light-weight devices to be fitted into aircraft, ships and vehicles to serve a host of purposes which the human has neither the time nor the resources to carry out. The human being himself is not free from development. New techniques of training are designed to develop latent capabilities which improve his efficiency and indeed his chances of survival. New and improved rations which are compact and nourishing, better and simpler methods of preparation, are being developed. Development of the large complex weapon systems of the future is not contemplated, but development of components for such systems is quite within Canadian capabilities on a co-operative basis with our larger partners.

Estimates

Referring to the estimates directly, it will be recalled that the Standing Committee on Estimates last year recommended a division of the main defence vote. That recommendation is carried out this year and there are now 15 parliamentary votes instead of one main vote, two votes for each service and the Defence Research Board, operation and maintenance, and construction or acquisition of buildings, works, land and major equipment. Separate votes are also provided for development and mutual aid. This new structure will give Parliament tighter control over defence expenditures, as transfer of funds between services will no longer be possible without supplementary estimates being brought before the house.

It might be of interest to hon. members if I furnish a breakdown of this year's estimates according to the major functions. It should be noted that the amounts shown under ACLANT are for naval and maritime forces earmarked for assignment to this NATO command in an emergency. Since these figures represent functional cost estimates, the amounts in some cases do not correspond precisely with amounts shown in the 1959-60 estimates for the particular activity. For example, the figures for reserves and cadets represent estimated total costs of these forces, whereas the estimates provide for direct costs related to personnal of these forces only.

Contributions to NATO: In so far as SHAPE is concerned, we have allocated $150 million or approximately 8.9 per cent of the total defence budget; to ACLANT, $203.5 million or 12.1 per cent; for defence of the Canada-United States region, including all army field forces in Canada, $398.8 million or 23.8 per cent of the defence budget; training forces, $227.7 million or 13.6 per cent; logistics support forces, $338.2 million or 20.2 per cent; command and administration, $102.9 million or 6.1 per cent; reserves and cadets, $53.6 million or 3.2 per cent; research and development, $51.1 million or 3 per cent; search and rescue, $11.4 million or 0.7 per cent; pensions, $58.4 million or 3.5 per cent; mutual aid, $21.8 million or 1.3 per cent; and various unallocated amounts, $62.8 million or 3.6 per cent.

In conclusion, hon. members will have noted that the total estimates this year amount to $1,680,194,006. For a country our size this is a very considerable sum and represents about 5 per cent of the gross national product and 27.3 per cent of total government spending for this fiscal year. Some critics, perhaps, outside this House suggest we are spending too much. To do less would mean failure to live up to commitments we have made, and to run the risk of weakening the Western alliance and invite disaster. I can assure these critics that every effort is being made on my part and on the part of the officials of the Department to ensure that the funds voted are wisely spent and all extravagance removed.

Other critics complain that we are too dependent on our allies and presumably that we should spend even larger sums. To these I say that we are in a partnership and that our partners fully appreciate our position, our sovereign rights and the efforts we are making. With the high cost of modern equipment we must weigh most carefully the advantages and requirements that can be expected before embarking upon any new enterprise or project. The criterion must be how essential is the new project or piece of equipment to the over-all defence picture. With changes taking place as rapidly as they are there is no time for hasty decisions. I place reliability of equipment before prestige weapons, and I made no apologies if I have taken some time to reach decisions. To be cautious does not mean that one lacks courage.

Still other critics have suggested different methods of spending the funds which are made available. I hope I will always be receptive to new ideas, but as no two critics in this group seem to be able to agree I can but thank them for their help and say that I prefer to rely upon the informed advice of the Chiefs of Staff, a group of dedicated men in whom I have great confidence.

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