50219-D-45 [Pt. 1.2]

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DEPARTMENT OF EXTERNAL AFFAIRS, CANADA.

NUMBERED LETTER

TO: THE UNDER-SECRETARY OF STATE FOR EXTERNAL AFFAIRS, OTTAWA, CANADA.

FROM: THE CANADIAN EMBASSY, WASHINGTON, D.C.

Reference:

Subject: Speech by Willard F. Libby, Commissioner, U.S. Atomic Energy Commission.

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We attach four copies of "Remarks by Dr. Willard F. Libby, Commissioner, U.S. Atomic Energy Commission, for delivery at the Washington Conference of Mayors, Washington, D.C., Dec. 2, 1954". In this talk Dr. Lilly discusses some of the problems for civil defence arising out of the use of atomic weapons.

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Ext. 182A (Rev. 2/52)

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UNITED STATES
ATOMIC ENERGY COMMISSION
Washington 25, D. C.

TEL. ST 3-8000
Ext. 307

FOR RELEASE AT 2:45 P.M. (EST)
THURSDAY, DECEMBER 2, 1954

Remarks by Dr. Willard F. Libby, Commissioner
United States Atomic Energy Commission
For Delivery at the Washington Conference of Mayors
Washington, D. C.
Thursday, December 2, 1954

THE ATOMIC ENERGY COMMISSION AND NATIONAL SECURITY

The Atomic Energy Commission has two primary functions insofar as national security is concerned. The first of these, of course, is to provide the nation with atomic weapons in the quantity and qualities necessary, and the second probably could be described as a responsibility to help the Federal Civil Defense Administration in civilian defense. Certainly atomic war makes the civilians participants in a very real sense, and the means of defense are in many ways as technical and unfamiliar and bizarre, as the atomic offensive techniques. Of course the Commission has other duties as well -- the peacetime applications of atomic energy to power and the use of isotopes in medicine and industry, the promotion of the general welfare through the encouragement of research and development in the sciences, and others. But these I do not interpret as bearing directly on the national security in the sense of supplying weapons to the military and assisting the public in civilian defense. Of course the other objectives are vital to national security in a broader sense, but in the sense in which we speak of the immediate responsibilities, the two cited are the principal obligations and objectives. I shall not speak of the weapons program today but shall discuss some of the problems of civilian defense.

A considerable amount has been written and published about the blast and heat effects of fission and thermonuclear weapons. We all have seen the dramatic motion pictures and photographs of the damage wrought in the Japanese cities. Many probably have read the publication, "The Effects of Atomic Weapons" which details in a very fundamental way the principles of the damage wrought by atomic weapons. A re-

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vised edition of this useful handbook is now underway. The blast and heat effects were in a general way not too surprising. The predictions made before the atomic bombs were actually realized proved to be fairly accurate. This was due of course to the great experience the world had had with ordinary explosives and to the general applicability of the laws of physics underlying the propagation of shock waves and their effects on the matter, and the understanding of the transmission of heat which had been acquired before 1945. In contrast, however, to the blast and thermal effects, the effects of the radioactivity of the atomic weapons were not so well predicted. We shall discuss these this afternoon.

The world is radioactive. It always has been and always will be. Its natural radioactivities evidently are not dangerous and we can conclude from this fact that contamination from atomic bombs, small in magnitude or even of the same order of magnitude as these natural radiations, is not likely to be at all dangerous. The second general point is that whereas heat and blasts are difficult to counter, the radiological hazard of atomic weapons is something one can do something about. This, of course, is extremely well known to the Federal Civil Defense Administration which has spent a great deal of time worrying about it.

Radioactive radiations are extremely varied in nature, some being very feeble in penetrating power, hardly able to traverse the thinnest sheet of paper, and others being capable of passing through several feet of concrete. The softest radiations are relatively harmless in general, at least the soft radiations exhibited by the radioactivities due to atomic weapons. We find, for example, that the tritium--radioactive hydrogen--from thermonuclear weapons constitutes no hazard to the world's population, principally for this reason. Of course it is true that the tritium from such weapons burns to form water and the human body passes water through it very rapidly. Also, of course, there is a great deal of water in the world to dilute any tritium introduced in the atmosphere. For the reason of the softness of the radiation and the short biological lifetime for water molecules in the human body, the human tolerance for this radioactive product is estimated to be at least ten millicuries under conditions of continuous exposure, that is, one can drink radioactive water at such a concentration as to maintain a net inventory of ten millicuries of this isotope in the body with no effects to be expected. For a single exposure, the tolerances are probably in the order of 1000

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millicuries. Analogous tolerances for some other isotopes are about a million-fold lower. In other words, the tolerances, the number of disintegrations per minute which can be tolerated in the body, depend very very much on the quality of the radiation emitted. The unit of radioactivity used is the curie which is a rate of disintegration of atoms, actually 2.2 million million per minute. One gram of radium disintegrates at this rate. Tritium, of course, is a rather extraordinarily harmless isotope from the point of view of fall-out and radiation hazards, but radium unfortunately is about the most harmful isotope known. As a result, our experiences with this first radioactivity to find any practical use have given us the impression that radioactivity in general is inclined to be rather more lethal than probably is justified. It certainly would be difficult to discover among the 800 radioactive species now known, one more dangerous than this first natural radioactive isotope, the widely used radium. In all cases, it is necessary to understand clearly the nature of the radiations emitted by the radioactive materials involved and not to assume that a curie of one isotope is as dangerous as a curie of any other.

One bomb of the size used on Hiroshima liberates 2.2 pounds of fission products. Although 2.2 pounds of radium would have an activity of 1000 curies, fission products decay very rapidly and contain at first an enormously greater amount of radioactivity. About 60 different radioactive species are present among the fission products most of which are radioactive though certain fractions are not. At one minute after the bomb is fired, the activity corresponds to nearly a million million curies, or about a million tons, of radium. However, at the end of one hour, the activity is reduced to that of 6000 tons of radium; after one day to 130; after one week to 13; and so on until the end of the year the activity is equivalent to 1/10th of a ton of radium. This 20-kiloton bomb therefore generates an enormous amount of radioactivity. Any fission weapon will generate radioactivity in strict proportion to its kiloton yield, or to the aggregate blast and thermal effects. We neglect for the moment any effects of radioactivity induced in the surroundings by the neutrons emitted in the explosion itself. Neutrons travel only a few hundred yards in air before being absorbed to form a long-lived isotope of carbon which is quite harmless. It seems clear, therefore, that the neutron radiation will not constitute any serious hazard to the civilian population. The fission products themselves, however, do.

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As pointed out before, the radioactivity of the fission products decreases rapidly with time--the activity being about in proportion to the reciprocal of the 6/5th power of the time elapsed since the bomb burst. This extremely rapid rate of decay has a very important bearing on civilian defense. It indicates that a few hours waiting in cellars and foxholes might provide effective protection for the bulk of the population. To illustrate, a fall-out which in one hour is giving 400 roentgen units of radiation per hour to a human body will at the end of one day give only nine of these units; at the end of two days, only 4; at the end of the week, it is reduced to about 1. For example an ordinary dental fluoroscope may correspond to 10 roentgens locally. An X-ray would be about 0.1 roentgen. We thus see that the decrease in the first few hours is enormous and the importance of protecting the population against exposure to the initial radioactivity is very great indeed. It is suggested, therefore, that a principal measure for protection of the populace against fall-out is reduction of opportunity of early exposure. The bulk of the fission products are not gaseous materials but consist of dust formed from the explosion. Radioactive atoms themselves reside on and in particles found in the air and formed by the explosion. The material can be removed with air filters and there seems to be no reason whatsoever that a good cellar will not be excellent protection. Tests of various ordinary structures to determine the protection they afford against general fission product fall-out radioactivity would be very useful. We know from the laboratory measurements on the characteristics of the radiations emitted by the fission products that ordinary structures should prove to be quite effective.

Following the cooling period, the populace could stay behind shelters as much as possible. Certain measures could be taken to remove radioactive material and reduce the general hazard, according to directions of the Federal Civil Defense Administration. It would seem that simple measures are likely to be effective. Sufficient radioactivity of long lifetime is contained in the fission products so that the waiting process will not be effective for more than the first day or so. The longer-lived material must either be removed or covered. As a rough rule, about a foot of earth is good shielding, two feet of earth is excellent shielding, and water at about three times these thicknesses, that is, one yard of water being equivalent to one foot of earth is effective also. In other words, a shovel properly used could save a man's life. If no ready made cellars were available,

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he could merely dig a hole and crawl in it and stay there for the first few hours. Even with a broom he might sweep the contamination from an area large enough to give him protection. A fire hose probably could be used for a similar purpose as well. A host of simple and practical measures suggest themselves for decontamination, but tests should be carried out to prove their effectiveness. It is probable that, in aggregate, the shielding and decontamination procedures would protect the populace very effectively against most fall-out conditions. All of these points are well known, of course, to the Federal Civil Defense Administration but are reiterated because of their general importance.

The most frightening and insidious characteristic of radioactivity is that it is unobservable except with instruments. Of course, in extremely high levels the physiological effects do manifest themselves rather quickly and in a sense this type of observation might be used, but these effects are so insensitive to radiation and occur so slowly, that there is certainly no likelihood of their being of any use whatsoever in the problem of protecting the population. The alternative seems to be that radiation detection instruments be used. One possibility is that cities customarily equip a certain number of their civilian employees such as the police and firemen with radiation detection instruments. The water filtration stations might possess them and routinely test the water supply. The schools might also be useful monitor stations particularly in the country. The second general point, of course, is that some education of the public on these matters is called for. It would be helpful if people realized that radiation is not overpowering or invincible. Demonstrations of the power of a shovel, a broom, and a fire hose would be most valuable.

The fall-out hazard itself is dependent on the conditions under which the bombs are fired. It is obvious that a bomb which is fired on the surface of the ground draws up into the fireball and carries up into the stem and cloud thousands and possibly millions of tons of matter. This material, of course, becomes thoroughly contaminated with the radioactive fission products and constitutes a mechanism by which the radioactivity is precipitated more rapidly and more locally and, therefore, at higher concentrations than it would be from an air burst. The Hiroshima and Nagasaki bombs both were air bursts and there was very little radioactive contamination in either of these cities. This result

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would seem to be a general one. Of course, the larger thermonuclear weapons have larger fireballs and consequently would have to be fired at a higher altitude in order to avoid touching the ground. But there seems no reason to doubt that for these weapons the same principle does apply. It is perhaps conceivable that very adverse weather conditions might lead to some concentration of the radioactivity by the rainfall occurring from or falling through the bomb cloud. The bomb mushrooms rise to such great heights, however, so rapidly that that seems to be not a very serious hazard, at least not nearly so serious as the type of hazard which surface fired bombs create.

It is clear that the danger will depend to a certain extent on the nature of the surface on which the bomb is fired. Even the composition of the soil would affect the rapidity with which the falling material condenses and precipitates, and the efficiency with which the radioactive products are removed from the air. Water, of course, differs from soil in this regard. It would be in the interests of civilian defense if experiments to test the efficacy of various measures, of washing streets and buildings free of radioactivity precipitated upon them by bombs fired under various conditions, could be made. Many of these data already are available. It seems likely, for example, that a bomb fired on limestone or coral should differ greatly in the radiological hazard it constitutes from one fired on desert sand. The heat of the bomb would dissociate the limestone or coral, forming lime which will be slaked by the atmosphere during its precipitation or after settling out on the surface of a building or street. This probably means that the particles will be quite adhesive. A sand shot, on the other hand, most certainly will make non-adhesive particles which should be easily removed. A water shot probably would be somewhat intermediate in this respect, a portion of the radioactivity being removable easily and a portion being quite adhesive. Studies of this type certainly would be helpful.

Air bursts precipitate their radioactive products over a wide area. Because the material available for the formation of particulate matter is limited to that in the bomb and whatever dust may be present in the air, the particles in general are inclined to be smaller and to have been formed at a higher altitude. This results in a very slow rate of precipitation, at least for the smaller particles and, most fortunately, keeps the radioactive material

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suspended in the atmosphere during the crucial first day or so, so that most of the radioactivity is dissipated in the atmosphere. In other words, air bursts are relatively harmless, radiologically speaking, as far as local contamination is concerned and as far as the net contamination of the earth by short-lived materials. They do, however, lead to a general widespread dissemination of long-lived radioactive fission products. These materials, of course, do not decay appreciably in the air and are precipitated eventually. It is easy to calculate that the widespread dissemination from the weapons fired to date should be detectable any place on earth although the intensity of radioactivity is so feeble that only the most sensitive instruments and procedures could be expected to reveal it. This is true. The amounts of radioactivity from the bombs found in ordinary matter are small as compared to the radioactivities naturally present in the earth and living objects. It is restricted to the surface of the earth and is found in those places one might expect to find dust falling out of the air and with the chemical properties of the fission products, that is, those of the rare earth elements and the alkaline earth elements. There are, of course, some other elements particularly, the Cesium isotope-137. The amount of radioactivity is so small it can be found most easily under conditions where the opportunities for dilution have been least. For example, detection in sea water is difficult in that the material so dilutes that considerable concentration is first necessary. From this type of measurement, however, we do understand something of the longrange dissemination processes which are involved in the fallout from the high levels of the atmosphere of the fine particulate matter resulting from air bursts. We can see that the curative processes by which the earth covers over this dust and incorporates it into the soil and the depths of the sea are such that it is not likely that this type of hazard would be one which the Federal Civil Defense Administration should concern itself with at this time. Generally speaking, there is no immediate hazard to the civilian population in this type of fall-out. Our problem is very likely restricted to the type of fall-out which results from firing bombs near the surface of the earth.

The likelihood of bombs being fired in this way is, of course, a question which can only be answered by military experts. One does know, however, that certain conditions would certainly produce surface explosions. A clandestine weapon most probably would be fired from the surface. It

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seems not unlikely, however, that many of the bombs, a large fraction of them, will be fired in the air for the reason that certain blast and thermal effects are larger and likely to result in a wider area of damage under these conditions. A bomb fired very close to the surface certainly has restricted area of blast and thermal damage. In other words, the fall-out problem might be minimized by the enemy's attempt to maximize the blast and thermal effects. It seems unlikely that one would be able to predict the probabilities in advance, but certainly there is a likelihood that fall-out will be a serious federal civil defense problem.

In order to judge more quantitatively the effect of a given fall-out we calculate the external whole body gamma radiation as the general exposure a person would receive who did nothing about protecting himself from fall-out and who is exposed to the fission products from a 1-kiloton bomb distributed uniformly over an area of one square mile. This is about as high concentration of fission products as one would anticipate finding, except under very adverse conditions since it would mean, for example, that for a 20-kiloton bomb, all the fission products would have to be precipitated in a circle with a 2-1/2-mile radius. If the fission products from such a hypothetical bomb were one day old before the fall-out occurred, and the individual spent the rest of his life in the same spot taking no protective measures, he would receive 470 roentgen units - a sub lethal dose which would kill half of those exposed. If however, he came into the contaminated area at the end of ten days, he would receive 187 and at the end of 100 days, only 74. One sees, therefore, that a populace which does nothing to protect itself from a fall-out might suffer very seriously but it is equally clear that all sorts of palliative measures can be taken--digging a foxhole would be an excellent one. The fresh earth piled around the edge would cover the contamination in the immediate vicinity and also constitute shielding against the radiation. Other measures would be effective. These, as I have said before, might be as humble as retiring to your cellar or even behind a concrete wall, or between a pair of buildings, or inside a brick house, etc. All such measures will greatly reduce the exposure. It would be important, however, that people have available instruments to guide them in these moves and that they have some preliminary education and understanding. The Atomic Energy Commission is willing to cooperate with the Federal Civil Defense

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Administration in these respects. It is to be hoped that the earnest efforts of your group will result in the strengthening of the defense capabilities of our Nation. There is no doubt that ignorance is a principal weakness and the discussion and consideration of these macabre factors and possibilities will in itself strengthen us.

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DEPARTMENT OF EXTERNAL AFFAIRS, CANADA.

NUMBERED LETTER

TO: THE UNDER-SECRETARY OF STATE FOR EXTERNAL AFFAIRS, OTTAWA, CANADA.

FROM: The Canadian Embassy, WASHINGTON, D.C.

Reference: Your Letter No. 1313 of November 3, 1954.

Subject:

Security: Unclassified

No: 1936

Date: November 16, 1954.

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Refer enclosure to Sec/Cab, CCOS, Civ Def. Coordinator, CDRB

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References

18 NOV 1954

DEC 2 1954

I attach for your information six copies of the study entitled "Passive Defense for Atomic War" which you requested in your letter under reference.

The Embassy.

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CENTER OF INTERNATIONAL STUDIES

PRINCETON UNIVERSITY

FREDERICK S. DUNN, *Director*

Passive Defense For Atomic War

By KLAUS KNORR

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Memorandum Number Six

PASSIVE DEFENSE FOR ATOMIC WAR

by

KLAUS KNORR

CENTER OF INTERNATIONAL STUDIES

Frederick S. Dunn, Director

Princeton University
October 1, 1954

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Introduction*

In view of the uncertainties surrounding the use of A- and H-bombs in any future war, the bearing of these weapons on a realistic foreign and defense policy is necessarily controversial. These uncertainties not only baffle the non-official outsider, but also must weigh heavily on those admitted to the inner sanctum of classified information. The implications of these new weapons are so tremendous in their consequences that they should be allowed to challenge our ingenuity without restraint if we are to make the best preparation for surviving in the age of new technology and old international conflict.

To the outsider unfamiliar with official knowledge and deliberation, it is puzzling to see the merits and demerits of alternative policies discussed within extremely limited circles, with the majority of the interested public condemned to the sidelines by deliberate exclusion from official calculations. It is equally puzzling to find official policy on air power committed to a rather one-sided emphasis on the offensive arm with a corresponding neg-

* The author is indebted to his colleagues William W. Kaufmann and Roger Hilsman, who, in numerous discussions, helped him to clarify some of the issues presented in this paper. He also benefited from a conversation with Ansley J. Coale. They are not responsible, of course, for the views presented.

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lect of air defense.[1] On the basis of public knowledge[2]--and on most assumptions, this knowledge should suffice for the purpose at hand--the official orientation seems debatable and, possibly, illogical and dangerous. Leaving aside the important question of providing for waging peripheral hostilities, limited in theater of operations, in the use of weapons, or in both, and concentrating on the problem of a major and unlimited war, a strong case can be made for preparing defenses against air attack. There is active defense, which comprises warning and interception of air attacks, and civilian defense, which is concerned with emergency measures toward minimizing casualties in the event of air raids. There is passive defense, designed to diminish vulnerability by changing the nature or location of industrial and urban targets, thus making them less susceptible to bomb damage.

The Official Doctrine on Air Power

The official American doctrine on air power--which, with slight modifications, also informs British policy--assigns an overwhelming proportion of resources available for air power to the

1. This neglect of air defense also marks most private discussion. For a notable exception, see J. Robert Oppenheimer, "Atomic Weapons and American Policy," Foreign Affairs, XXXI (1953), pp. 525-35.
2. This memorandum is written without benefit of any classified material. The author has been told that there are a few studies which present a point of view similar to that taken here, but these documents are not available to the public.

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strategic air force. A strong Strategic Air Command (SAC) is to endow the United States with the capacity for instant and massive destruction of Soviet cities and industries. A powerful force of intercontinental bombers, plenty of fission and fusion bombs, a far-flung string of air bases, and the certainty that this capacity will be exerted in the event of major war--all these factors combined are to deter aggression from getting started. As Secretary Dulles pointed out, the heart of our defense problem is "how to deter attack." "This, we believe requires that a potential aggressor be left in no doubt that he would be certain to suffer damage outweighing any possible gains from aggression." "The free world must make imaginative use of the deterrent capabilities of these new weapons....Properly used, they can produce defensive power able to retaliate at once and effectively against any aggression."[3] Similarly, British Air Marshal Slessor professes the belief that "the continued existence of atomic weapons gives us an almost certain chance of preventing another world war....America's safety lies in the prevention...of war, just as does ours."[4] It is an integral part of this policy that air defense, both active and passive, receive a great deal less attention than nurturing and

3. John Foster Dulles, "Policy for Security and Peace," Foreign Affairs, XXXII (1954), pp. 357-58.
4. Sir John Slessor, Strategy for the West, New York, William Morrow, 1954, pp. 18, 21.

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preserving offensive strength, except insofar as active defense is needed for protecting the ability to mount a massive retaliatory blow.

Whatever merits this doctrine could claim so long as the United States enjoyed a monopoly of, or decisive lead in, the development of atomic bombs, it remains the mainstay of policy even now, when this monopoly has ceased and any persisting American superiority in weapons is diminishing and may well diminish further or disappear altogether in the course of time.

Is Retaliatory Capacity Sure to Deter?

The extreme emphasis on the Big Deterrent is sound under three conditions. First, it is unquestionably sound if the big "Sunday Punch" will actually deter major aggression. But can this effect be taken for granted, even though its achievement is likely? Air Marshal Slessor, for example, thinks that the existence of atomic weapons will give us "an almost certain chance of preventing another world war."[5] But "almost certain" falls short of certain, and even his qualified prediction may be fallible. He does concede moreover, that atomic weapons will be used "in the unlikely event of another great war."[6] If we cannot expect the

5. Ibid., p. 18.
6. Ibid., p. 19.

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possession of the Sunday Punch to deter with certainty, then it is doubtful wisdom to stake everything on this one card, for if the card turns out not to be high enough, the consequences will be frightful. The deterrent weapon may not deter because a possible aggressor--the USSR, for instance--decides on peace or war according to cost calculations which are not necessarily identical with those that seem reasonable from the viewpoint of American goals and preferences. Soviet leaders may, for example, put a lower value on avoiding the casualties which they must expect to suffer in unrestricted warfare than American leaders put on the lives of their own people. With an assortment of objectives different from ours, the Soviet elite may also foresee greater gains from unlimited war, at any particular time, than we would anticipate. Furthermore, the Big Deterrent may fail to deter because we slide, more or less unwittingly, into atomic warfare. A trigger-happy or desperate commander, or anxiety not to sustain the first nuclear blow on the homeland, might turn a more limited form of war into one of unrestricted air attacks.

If the strategy of the Big Deterrent should prove mistaken --that is, if a major war involving nuclear air attacks should be precipitated by the other side,[7] then the United States could

7. It is unimaginable, for obvious reasons, that the United States should plan to start an atomic preventive war. Nor would doing so make sense now that the Soviet Union may be able to

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presumably retaliate in kind. While it would give us satisfaction to chastise the aggressor, we might still be defeated and, even in the best of circumstances, be burdened with a degree of destruction that spelled the end of the American way of life with finality for tens of millions of casualties, and for the survivors as well for a long time to come.

Furthermore, we shall be severely limited in our freedom of action if we cannot be sure that our capacity to retaliate will deter aggression, for a determined aggressor could then blackmail us ad infinitum, provided he were less loath than we are to unleash the full fury of nuclear bombs. Air Marshal Slessor is correct when he observes that "nothing would be more dangerous than to give the impression to a potential aggressor that we should not use them [atomic bombs] in the event of aggression."[8]

It is difficult to see how we can feel sure that SAC's Sunday Punch will prevent large-scale war from occurring and, if we cannot, the one-sided concentration of air power in a powerful SAC is a risky policy.

---

7. (continued) retaliate instantly and in kind. Why should we want to initiate hostilities which are bound to lay waste to our cities and fatally cripple the economic capacity of this country? If this were a possible strategy, moreover, it would most likely be a possible strategy for the Kremlin as well, and to concede this is to shatter the doctrine of deterrence.

8. Ibid., p. 18.

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Is Air Defense Technically Impossible?

The second condition under which this stress on offensive prowess is sound involves the impracticability of mounting any effective air defense because defense is physically unfeasible.

It may be true that effective air defense, both active and passive, is indeed technically impossible and that unlimited resort to fission and fusion bombs will literally wipe out civilization. This possibility suggests the well-known image of two scorpions confined in a bottle, each able to kill the other only at the cost of being killed himself. So far as public knowledge goes, this condition does not now prevail. We have been told that H-bombs can be made with an explosive power about 1,000 times as large as the A-bomb dropped on Hiroshima, and that this bomb can inflict destruction up to a radius of some 10 miles, or over an area of about 300 square miles. We have also been told that, given a sufficient supply of A-bombs, the manufacture of H-bombs is relatively cheap. These are dreadful dimensions. Yet since bombs must be delivered, and delivery is not as yet cheap, they do not suggest the likelihood that life in a country of nearly 3 million square miles can be obliterated with ease.

Senator Symington has stressed that intercontinental ballistic missiles are sure to be available in the not too remote

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future; that there is no present defense against them, once they are launched, for they do not depend on electronic guidance and hence cannot be diverted from their course by electronic jamming; that accuracy in delivering these weapons will become less and less important; and that target dispersal will no longer offer a solution to the problem of defense.[9] It is possible that radioactive vapor will threaten the lives of populations not directly killed by enemy bombs. The question is whether this stage has been reached or will be reached soon. And in making such predictions it must not be ignored that, whatever the awful destructiveness of the bombs and however cheap they may be, the ingenuity which invented them, although only by dint of tremendous effort, may also, if urgently turned in this direction, improve our capacity for destroying bomb carriers. That such a development is not now in sight does not offer conclusive proof of technical infeasibility.

Concepts of Effective Defense

Even should defense be technically possible, its effective establishment might call for installations, equipment, trained manpower, and a dispersal over space and underground on a scale that would entail economic suicide and bring down civilized

9. Congressional Record, US Senate, 83rd Congress, 2nd Session, July 21, 1954, pp. 10707-10.

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life in any case. Without access to all the information, the outsider can make no judgment on this matter. However, gross concentration on an offensive striking force would be debatable, and perhaps wrong, should defensive preparation be neither physically impossible nor suicidal economically. It is on this assumption that the following arguments rest.

Conclusions about the merits of building up effective defensive strength hinge in large measure, of course, on concepts of what constitutes "effective" defense. The concept which appears to dominate a great deal of the current debate on the subject is of the all-or-nothing variety. To be effective, air defense must, according to this school of thought, prevent all but minor destruction of life and property. Defense tends to be regarded as ineffective if it is reasonable to expect a huge outlay on air defense merely to reduce casualties from a hypothetical 40 million to a hypothetical 20 million, and the destruction of our productive capacity from a hypothetical 50 to a hypothetical 35 per cent.[10] The discussion of active air defense, designed to intercept hostile aircraft or missiles, exhibits this disposition. Air Marshal Slessor, for example, argues that an attrition

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10. According to one authority, a strong civil-defense program may cut casualties by half. Cf. Gordon Dean, Report on the Atom, New York, Knopf, 1953, p. 129.

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rate on attacking bombers of from 5 to 10 per cent was effective over time under the conditions of the last world war, but that this rate is appallingly inadequate in view of the awesome destructiveness of a single nuclear bomb. In his view, the kill rate must approach 100 per cent to make active air defense effective.[11] The U.S. Air Force has announced publicly that a kill rate of no more than 20 to 30 per cent could be counted on under récent conditions, and it is the conclusion of many experts that this state of affairs renders active air defense impotent.

Whether one expects 20 or 40 million victims, depending upon more or less defensive capacity, a horrible mauling is implied in either case. But is it actually an equal mauling? Is the hypothetical difference of 20 million survivors really negligible, when another 20 million are doomed to perish? If this is our response, then we are saying in effect that either the deterrent weapon works to prevent war, implying our firm resolve to use this weapon in an eventuality, or--if it fails to deter--we think ourselves lost and might as well throw in the sponge in any case. And this amounts to saying that the additional 20 million survivors, who could have been saved by defensive measures, would in that event proceed to commit mass suicide or submit to a worse fate than death. While it is, of course, repulsive to consider these contingencies, is it wise to refuse to face the

11. Strategy for the West, p. 19.

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issue?

In the following, this issue is faced on the assumption, already stated, that an atomic assault on the United States will not snuff out all life with one murderous blow; on the further assumptions that a majority of Americans will in fact survive such an attack and that the size of this majority can be increased appreciably by appropriate defense action; and on the final assumption that, when the chips are down, Americans will rather fight than surrender, and rather live than commit suicide. All of these assumptions can be questioned. But they cannot be dropped before they are proved wrong or extremely far-fetched. Moreover, even if the pessimists are right and a majority of the population cannot expect to survive, the question remains whether it is not worth while to increase the number of survivors, provided the increase can be of appreciable size.

How Much Can We Afford for Air Defense?

The official doctrine on air power could also claim strong support under a third condition: if an adequate provision for an effective air defense would be so costly as to wreck the economy. It has been argued that we cannot afford to maintain both offensive and defensive power, that there is some immovable ceiling on what we can spend on defense, that our expenditures are bumping

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against this ceiling now, and that--because deterrent force holds out great hope of averting major war altogether--we must allocate to SAC nearly all we can afford apart from outlays on conventional armed forces.

This condition is almost certainly a figment of the imagination. Unhappily, there is no general agreement on any criterion which will permit rational decision on what is or is not too expensive. The argument is usually in terms of "undermining" or "wrecking" the economy without any definition of these terms or of precisely how these effects would result from various levels of investment in passive air defense. Only reference to quantitative factors can afford a basis for enlightenment.

As will be argued below, a great deal can be done to lessen American vulnerability to hostile air attack without increasing the current defense budget by more than a fifth or even less. It makes no sense to say that the United States cannot sustain such a rise in defense outlays without subjecting the economy to unbearable strain. This country has spent a great deal more than these amounts in wartime and has done so with a thriving and expanding economy. This is perhaps not entirely relevant, since the nation will be averse to putting up with the sacrifices of a perpetual emergency. Yet, according to a sober study, sponsored by the National Planning Association, the

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United States could appreciably add to its defense budget without sapping its economic strength.[12] Defense spending rising gradually above current levels at a rate of $10 billion a year by 1956 would--given a normal growth of the economy--neither interfere with further economic expansion nor prevent a continuing rise of civilian consumption. It would permit some tax reductions and not necessitate comprehensive direct controls over spending. A larger increase by $20 billion per annum would still permit per-capita consumption to rise moderately and net investments to increase, provided the labor force were somewhat expanded and the average work week somewhat lengthened; and this could be achieved by only continuing 1953 rates of taxation or their equivalent.

If defensive capacity can be improved appreciably by expenditures within these ranges, then there is no reasonable economic argument against doing so; and the question of whether or not to make these outlays can and should be decided primarily on military and political grounds. This is not to pretend that, excepting expenditures made under conditions of unemployment, defense could be bolstered without sacrifice in terms of somewhat lower levels of investment and/or consumption than could be main-

12. Gerhard Colm, Can We Afford Additional Programs for National Security?, National Planning Association, Planning Pamphlets No. 84, Washington, D. C., October 1953.

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tained otherwise; and there is therefore good reason to keep military preparation to the minimum consistent with safety. The range of these sacrifices, however, is so moderate that they seem a small insurance premium when viewed against the horrendous scale of destruction which atomic warfare is likely to inflict. Atomic weapons do not belong to a dream world. They are part of a very real world which Americans, and especially Americans, inhabit.

Active and Passive Air Defense

There is a good deal that can and should be done in the area of civil defense by way of providing air-raid shelters, emergency reception centers for evacuated persons, fire-fighting and medical facilities, relief of congested traffic arteries, and many other emergency facilities of this kind. There is a great deal more than can be done to set up an effective warning and interception system. Some of these tasks are already being undertaken, although on a scale which those in charge regard as far too stingy. These measures of air defense would doubtless be very costly in absolute amounts, especially since changes in the technology of offensive and defensive means and operations may cause a high rate of obsolescence. Yet, relative to the strength of the American economy, and relative also to the

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additional margin of protection that these measures can afford[13] --even if this protection is far from 100 per cent--they are likely to be reasonably cheap. Would an outlay of, say, $4 billion a year for such preparations be too expensive? Do not both a false conception of economy and a psychological impediment to considering the full consequences of weak defenses paralyze sound planning in this realm?

Important as such defense preparations are, they should not be allowed to blind us to the opportunities for exploiting one great asset which the United States, unlike its European allies, possesses in abundance: space. There are, moreover, good reasons for expecting that the costs of utilizing this asset are relatively small compared with the costs of active and civil air defense, which require large outlays on installations useless for anything but their specific purpose and highly trained manpower to man them. For a nation endowed with the advantage of ample space, the first objective of passive air defense must be in the direction of maintaining as large a proportion of the population as possible outside obvious and highly concentrated target areas. Being the abundant resource, space is relatively cheap; and over a wide range of locations for production and residence, the disadvantage of one over the other

13. The current de-emphasis on defense may be retarding technological advance in the design of defense instruments and tactics which would increase the margin of protection.

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must be relatively marginal.

Partial Passive Defense Is Not Too Costly

Following the development of the A-bomb, some serious thought was indeed given to the possibility of dispersal. Yet this idea was quickly dismissed by most students as unrealistic, on the grounds that disassembling our great urban and industrial centers would surely be of prohibitive cost, ruinous to the economy, and scarcely feasible politically. These conclusions were justified. But consideration of the case for extreme dispersal did, unfortunately, do an injustice to the cause of far more limited and gradual dispersal, which, although falling far short of giving complete protection, might still save millions of lives and a corresponding quantity of productive assets. Merely to ask whether the existing capital facilities should be moved or abandoned was a loaded question to which there could be only a negative answer.

There is a different order of question that could have been raised then and deserves to be raised now. The United States has a rapidly growing population and is constantly rebuilding and adding to its capital assets: residential housing, office building and plant, merchandising and transportation facilities, public utilities, etc. From 1945 to 1953, the popu-

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lation grew by no fewer than 20 millions. Marriages have been averaging over ten per annum per 1,000 of population. The output of electricity has risen from 23.5 billion kwh per month in 1948 to 36.8 billion a month in 1953. Housing starts (non-farm only) have amounted to 8.2 million units from 1946 to 1953. Including residential construction, but excluding public investment, gross domestic investment has run to about $354 billion from 1946 to 1953. Of this, $80 billion has been for new business construction, not counting equipment. Would it have been unreasonable or too costly to have caused this rebuilding and growth to have taken place in a somewhat more dispersed fashion than it did? And would it be unreasonable or too costly to cause some spatial redirection of maintenance and growth in the future?

The fact is that, in this respect, the United States has been benefiting during the postwar years from some spontaneous and gratuitous dispersal, as is evidenced by the establishment of numerous new plants outside the traditional metropolitan and industrial agglomerations, the rapid economic development of the South, the continued expansion of the West, and the remarkable push of urban populations toward the suburbs. There are good reasons for this relative deconcentration. In a wealthy

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country, further industrial development means in general a rising ratio of value added to the raw material, and this makes location near the sources of raw materials less compelling than before. Production also is becoming less dependent on coal, and the increasing use of electric power and natural gas means a shift to fuels which are available in many localities that cannot be cheaply provided with coal. The trend visible in many large corporations toward diversifying their output and granting a high degree of autonomy to individual production units facilitates industrial dispersal. So does the sensitivity of many businesses to seeking out areas of relatively cheap labor and land and low taxation. In a wealthy economy which characteristically sees service industries grow faster than manufacturing or primary production, there is also a strong incentive to locate production in or near markets. Once some key industries establish new plants in a new area, it will become profitable for others, especially subsidiary industries, to follow suit; and any influx of labor will attract the construction industry, merchandising and other service trades, and such manufacturing production as benefits from close proximity to markets. Any sizable relocation of production is likely to have multiple effects in attracting population.

What is required for a sensible policy of dispersal is

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to supply a marginal stimulus and thus strengthen the spontaneous trends which are already operating and which will come to operate as facilities in new areas expand. If dispersal is encouraged at the margin, where on all other considerations not much of an incentive is needed to tip the balance in favor of one location rather than another, then the expense of giving such encouragement cannot be prohibitive. There may be numerous instances, once dispersal gets under way, where it is cheaper, from a strictly economic point of view, to provide houses, schools, utilities, and roads in areas of relatively sparse population than in the big urban centers. It is possible that, if the public has become more keenly aware of the horrible specter of modern war, many workers and entrepreneurs will let these considerations influence their choice of where to work and live; and, once this happens, it becomes profitable for other businesses to follow. Once the problem is grasped, provision of tax incentives--some tax deterrent to putting up new facilities in specified areas of congestion, and perhaps some incentives for choosing locations in specified areas of lesser concentration--may suffice to give considerable impetus to practicable dispersal of people and property.[14] The required tax incentive may be obtained by

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14. The United States initiated such a dispersal program under the Truman administration, but it was confined to key defense plants and has since been reduced to an extremely minor operation.

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allowing a more or less rapid write-off of new construction; and this technique could be applied to relatively few key industries instead of to all businesses or industries.

Another suggestion has been to set up a compulsory scheme of war damage insurance with premiums varied according to risks.[15] For newly growing towns, it will be cheaper than in old established ones to provide ample traffic facilities; for houses about to be constructed, it may be worth exploring whether solid cellars, affording protection against blast damage near the periphery of a bomb explosion, would not be feasible at a relatively modest cost; and there are, no doubt, other protective techniques that are more easily applied in new structures and towns than in the old urban centers.

Thus, some dispersal could result from simply helping citizens to make locative decisions which reflect the contingency of nuclear warfare, and individuals themselves would, in that event, bear the presumably small cost of choosing, at the margin, one locality rather than another. Employment of other techniques, such as tax or insurance schemes, need not cost the government anything, or will cost it only little, since tax or premium concessions could be made to offset tax or premium penalties; so

15. Cf. Carl Kaysen, "The Vulnerability of the United States to Enemy Attack," World Politics, VI (1954), p. 203.

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that the costs, again presumably modest, would devolve upon individual businesses or citizens. If, and to the extent that, dispersal would add to the nation's transportation bill, the expense would also fall largely on private citizens; and these costs should be low so long as only a moderate push toward increased dispersal is in question.

But the government has opportunities for promoting decentralization by direct expenditures. If desired, it could subsidize certain protective measures, such as the building of cellars adequate to afford some safety at the periphery of bomb bursts. It could disperse public enterprises, such as arsenals, and participate vigorously in the construction of irrigation systems, power facilities, highways, and other assets for the purpose of influencing the geographic distribution of an expanding economy and population.

So far as a substantial but practicable program for dispersal requires government expenditures, there is a further point to the problem of costs. These expenditures would represent real costs in an economy operating at full-employment level. There would be additional and highly undesirable effects if these expenditures were injected into an economy subject to strong inflationary pressures. On the other hand, the real costs

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would be small or nil when these expenditures were made at a time of unemployment or economic stagnation, for they would set to work resources which would produce nothing otherwise. It cannot be demonstrated that the recession which the United States has been experiencing since the middle of 1953 has been induced by the cut in defense expenditures and its anticipation, but it is not unlikely that this retrenchment fed whatever deflationary factors were at work at the time. What is important is that this decline in business activity has cost the United States more than $20 billion of goods and services that would have been produced if the preceding expansionary trend had not been interrupted. There are times when the economy is depressed or stagnating, during which a program for passive air defense could be pursued at zero or slight real costs. At such a time, expenditures of this kind would strengthen rather than weaken the economy.[16] This is not to suggest that such a program should await times of economic slack for its implementation. It deserves a priority which does not tolerate deferment. But since the program is a long-range one, there are opportunities when it can be stepped up at low cost.

16. Cf. Opportunities for Economic Expansion, National Planning Association, Planning Pamphlets No. 87, Washington, D. C., July 1954, pp. 1-10.

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The costs of thus paring our vulnerability to enemy air attacks are not, of course, entirely economic. One cost would certainly be the abandonment by some people of psychological income which is peculiarly available in large metropolitan areas and which they happen to cherish. Another cost would be the requirement that people accept the burden of thinking out the implications of possible atomic warfare, and that the government insist on their doing so. A third cost item would be a somewhat increased measure of government interference in the location of production and residence. Finally, dispersal might well affect, in some cases, the relative position of different states in the Union and, on this account, raise awkward problems and political resistance to which a feasible program would have to make reasonable adjustments. These are heavy drawbacks. But they may be worth accepting in view of the greater protection to be afforded in time of war.

A scheme for dispersal may be practical and fairly inexpensive and yet fail to be worth undertaking if it costs a would-be aggressor even less to add to his offensive strength. Little would be gained, for example, if it cost the USSR fewer resources to double its capacity to deliver bombs on American targets than it cost us to double the number of targets through dispersal. It is doubtful, unfortunately, that such a comparative

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calculation could be made with any pretense to accuracy or that it would not quickly become out of date if it could be made for present conditions. The chief factors involved--the offensive air power of a possible enemy and our active defense--are highly variable in terms of technology, the actual production of facilities, and the skill of the military services. If all these considerations are taken into account, the prospects are likely to indicate that dispersal is a reasonable insurance policy.

On the basis of the assumptions made, there seems to be a persuasive case for giving the problem of passive defense an expeditious and generous airing. A substantial program--though not a program to protect everyone--seems feasible and inexpensive. What is involved is not the abandonment of the large urban centers, but that they grow less than they otherwise would, and some promotion of medium-sized cities of between 30,000 and 100,000 inhabitants, still large enough to provide manpower for manufacturing enterprises of economic scale even when they are not located on the periphery of metropolitan centers. What is also involved is a gradual rather than immediate diminution of vulnerability.

Psychological and Political Impediments

If the above analysis is reasonable on the basis of the

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assumptions that have been set forth, then it is curious and astonishing that passive air defense has been neglected in the United States. Three reasons may chiefly account for this neglect. In contrast to the economic argument, they are rarely mentioned in public discussion and cannot be measured in their impact.

(1) Conceivably, American policy for air defense lacks over-all balance because passive defense would fall largely outside the province of the military. Therefore, so far as the Pentagon determines defense policy, this institutional obstacle might well prejudice the case for reducing United States vulnerability. Since defense funds never seem large enough, the inclination of the military to emphasize their own activities is certainly understandable, and the corrective to be applied is a compensatory intrusion of civilian government.

(2) Consideration of passive air defense may also suffer from an emotional block. Among military and civilians alike, there is a widespread preference for contemplating offensive as against defensive operations, a belittling of "defense-mindedness," which is easily shrugged off as Maginot-line mentality, and an irrational faith that, somehow, "It can't happen here," an abiding conviction that this country

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is not really violable.[17]

This wishful faith in the ultimate safety of the United States is held, inconsistently enough, even by people who are --in a separate cerebral compartment, so to speak--fully cognizant of the danger actually confronting the country. It is a faith, therefore, which will not readily retreat before the disagreeable tenor of rational expectation. On the other hand, considerations of defense, in addition to mobilizing offensive strength, do not in the least imply softness or lack of viability. They are the outcome of a rational attitude not at all incompatible with a bold and firm posture. Maginot-line mentality, finally, is not to be equated with the attitude of discovering that combination of defensive as well as offensive strategies which will maximize military strength from available resources. It denotes rather a one-sided preoccupation with putting all reliance on a single strategy. It is possible that excessive concentration on the Sunday Punch represents Maginot-line mentality in its true essence.

(3) There is also the grave question of whether those in the government who possess full knowledge of the potentialities

17. This point has been made strongly by Bernard Brodie, Possible U.S. Military Strategies, The RAND Corporation (P-524), April 1954, pp. 11-13.

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of nuclear war dare to draw the general public into their confidence. They may hesitate to do so on two grounds. Supposing that the general public does desire to receive full clarification of its involvement in the atomic age, those in charge of official policy, as well as those aspiring to the responsibilities of office, may fear that an informed public will fall victim to at least a temporary case of severe jitters and thus circumscribe still more than is already the case the available room for maneuver in foreign affairs. If, on the other hand, the public is reluctant to face enlightenment, they may suspect that a government placing the burden of knowledge upon it will not be a popular government, especially when it becomes clear that what the government can do to protect the nation is in any event limited. Among a frustrated and resentful part of the electorate, the desire to find scapegoats might cause repudiation of those who insist on revealing the awful consequences of major war.

The first fear--if it holds sway in high quarters--may or may not be justified. But it can hardly be argued seriously that the power and foreign policy of the United States is best served over the longer run by not assisting the general public to realize the facts of life in the atomic age; for the shock of realization may come at a critical time and then undermine the very foundations on which American foreign policy was built.

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Government inaction is more pardonable if it is the second fear which prevents political leaders from pushing an unwilling public into an awareness of the predicament. In a democratic society, it is the business of leaders to seek, rather than jeopardize, public support. Yet it is far from certain that more than a small proportion of the citizenry would in fact react with hostility to being informed of the choices open to it. In order to minimize the risk and overcome public reluctance to face the issue, the undertaking should be put on a non-partisan basis and enlist sensitive opinion leaders from all groups. Information is only the first step in such an attempt and must be followed by an effort to arouse concern about the dangers of nuclear weapons and assist in evaluating alternative courses of action. To do this, and to minimize the shock of recognizing the terrifying implications of the situation, it is necessary to suggest programs by which the danger can be lessened appreciably.[18]

So far, the majority of the general public has apparently chosen to ignore the consequences to themselves of atomic warfare, even though the subject has received a great deal of attention

18. Cf. William A. Scott, "Attitudes Toward Participation in Civil Defense," Public Opinion Quarterly, XVII (1953), p. 384. Carl I. Hovland and others, Communication and Persuasion, New Haven, Yale University Press, 1953, p. 65.

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in press and radio, and even though the public shares a fairly high expectancy of large-scale war. In part, people justify this inconsistency by assuming either that the nation's military forces will in fact prevent heavy damage to the cities, or that, in this matter, the individual is helpless and must leave it to Washington to find a solution. Probably it is fear which, among the larger public, accounts for the fact that the problem is more or less suppressed.[19]

No large-scale preparations for air defense--active or passive--can be undertaken without strong public support. Reluctance to secure this support forecloses the possibility of a balanced strategy. Provided defense is technically feasible, it will be political impracticability, rather than economic cost, which actually militates against a rational consideration of defense.

Added Strength from Lessened Vulnerability

Assuming that SAC cannot certainly prevent full-fledged atomic war and that a worthwhile measure of effective air defense, especially passive defense, is both technically possible and economically supportable, the doctrine on air power

19. Elizabeth Douvan and Stephen B. Withey, "Some Attitudinal Consequences of Atomic Energy," Annals of the American Academy of Political and Social Science, CCXC (November 1953), pp. 108-17.

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currently in vogue contains a serious fallacy. Over a wide range of military considerations, it is clearly useful to distinguish the defensive arm from offensive capability. When over-all strategy is at issue, however, this distinction can be carried to excessive lengths and become productive of faulty inferences. From this broad point of view, offensive air power and air defense are surely integral parts of one capability: military air power. Our military literature reveals that American strategists are seriously concerned both with Russia's active air defense, which must affect our ability to deliver bombs on selected targets, and with Russia's passive air defense, which must affect her vulnerability to our retaliation. We assume that their air power rests on several foundations. What holds true of the Soviet Union as an air power must hold true also of the United States.

By reducing, over time, the vulnerability of the United States to the atomic weapons of an aggressor, passive as well as active air defense would not merely save lives and property. It would also confer on us several other advantages. By reducing the offensive power of an aggressor, it would force him to consider allotting more scarce resources to an expansion of his bomb stockpiles and "trucking" facilities. By making our own country less violable by air attack, such a balanced program

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would diminish the aggressor's ability to intimidate us or to defeat us if he precipitates war. This means that our capacity to use our offensive power is enhanced, for our willingness to use this power is not independent of our own vulnerability. Defensive preparations would demonstrate to any would-be aggressor that the United States is neither given to delusion nor bluffing, but that it means business. If these expectations are correct, then a strengthening of defense might, by discouraging attack, increase the likelihood that we shall be spared disaster.

It is also possible that nuclear attacks would start a war, but not finish it. Increased defensive capacity, in these circumstances, could enable us to mobilize resources for the more conventional types of military action which might ensue. Nor is this nation only interested in preventing war if possible, and in winning it if unlimited war is precipitated by an aggressor. It is also interested in reconstruction thereafter. If defense against air raids can save life and property, it can also increase our capacity for recuperation.

In conclusion, once we have built up our strategic striking force, there must come a marginal point at which our total air power would gain more from allocating a relatively larger rather than a relatively smaller proportion of available

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resources to expanding defensive rather than offensive facilities. No doubt, it will be difficult to settle even approximately on the most efficient distribution of resources--difficult particularly in view of continuous technological and military changes; but the principle is sound and its recognition would promise a healthy consideration of defensive efforts. The United States could have more confidence in its Sunday Punch if it were associated with some capacity to absorb punishment.

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Defence Liaison (1) R.C. Brown/ejk

DEPARTMENT OF EXTERNAL AFFAIRS, CANADA. (FILE COPY)

NUMBERED LETTER

TO: THE CANADIAN EMBASSY,
WASHINGTON, D. C.

FROM: THE UNDER-SECRETARY OF STATE FOR EXTERNAL AFFAIRS, OTTAWA, CANADA.

Reference:

Subject: Report on U.S. Defence Policy.

Security: UNCLASSIFIED.

No: D- 1313

Date: November 3, 1954.

Enclosures: one.

Air or Surface Mail: AIR

Post File No:

Ottawa File No. 50219-D-40

52 | 58

References

Enclosed is a copy of a news report from Princeton, N.J., dated October 23, which appeared on page 39 of The New York Times on October 24. It refers to a report published by the Center of International Studies at Princeton University on U.S. Defence Policy.

2. If possible, we should be grateful if you could obtain and send us up to six copies of the report.

BENJAMIN ROGERS
FOR THE
Under-Secretary of State
for External Affairs

Internal Circulation

Distribution to Posts

Ext. 181B (Rev. 2/52)

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Extract from The New York Times,
Sunday, October 24,1954.

AIR RETALIATION SCORED AS POLICY

Princeton Report Advocates Steps in "Passive Defense' to "Absorb Atomic Blows.

PRINCETON, N.J., Oct. 23-

The official United States policy placing emphasis on "the Sunday punch" of the Strategic Air Command, with consequent neglect of air defense, was criticized in a report here today.

The report, published by the Center of International Studies at Princeton University, called the official policy "debatable and possibly illogical and dangerous."

In a series distributed to men in public life, business executives and academic personnel, the report was prepared by Dr. Klaus E. Knorr, Professor of Public and International Affairs at Princeton University. The Center of International Studies, for which it was written, did not have access to classified Government files in its work.

The study, entitled "Passive defense for atomic war," noted that the doctrine of massive retalliation in the event of an attack was based on the premise that this country could enjoy "a monopoly or decisive lead in the development of atomic bombs." It continued:

"Now, when this monopoly has ceased and any persisting American superiority in weapons is diminishing and may well disappear in the course of time, the official policy contains a serious fallacy."

"If we cannot expect the possession of a Sunday punch to deter with certainty, then it is doubtful wisdom to stake everything on this one card, for if the card turns out to be not high enough,the consequences will be frightful."

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FOR REDUCING VULNERABILITY

Asserting that "gross concentration of an offensive striking force would be debatable, and perhaps wrong, should defensive preparation be neither physically impossible nor suicidal econimically," the 8,000-word report held that the United States could "have more confidence in its big deterrent if it were associated with some capacity to absorb punishment."

It made a distinction between "active" and "passive" defense criticizing the view that unless air defense afforded ~~afforded~~ 100-per cent protection to our cities, it would be unpractical.

"The concept which appears to dominate a great deal of current debate on the subject is of the all-or-nothing variety," it went on. "To be effective, air defense must, according to this school of thought, prevent all but minor destruction of life and property."

Observing that defense tended to be regarded as ineffectual "a huge outlay" on air defense was expected "merely to reduce casualties from a hypothetical 40,000,000 to a hypothetical 20,000,000" the report added:

"A great deal can be done to lessen American vulnerability to hostile air attack without increasing the current budget by more than one-fifth or less. It makes no sense to say that such a rise in defense outlays would subject the economy of the United States to unbearable strain.

"For a national endowed with the advantage of ample space, the first objective of passive air defense must be in the direction of maintaining as large a proportion of the population as possible outside obvious and highly concentrated target areas. Costs of such a defense would be relatively small compared with the costs of active and civil air defense."

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TRANSMITTAL SLIP

TO: 1. Under-Secretary of State for External Affairs, Ottawa

FROM: The Canadian Embassy, Washington, D. C.

Security: none

Date: August 23, 1954.

Air or Surface: surface

No. of enclosures: 8

50219-D-40

The documents described below are for your information.

Despatching Authority: J. D. Babbitt

Refer Senate Report - Sec/Cabinet
House Report → Pres AECB
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Senate Report → CDRB

Copies	Description	Also referred to:
4 each	House Report No. 2660 and Senate Report No. 2488 - Atomic Weapons Rewards Act of 1954. Reference: Our Letter No. 1479 of August 16, 1954.	Also refer RCMP (SB) Done Sept 2 [illegible] file

27 AUG 1954

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Ext. 250 (Rev. 10/51) *(Instruction on Reverse Side)*

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Calendar No. 2519

83D CONGRESS
2d Session

SENATE

REPORT
No. 2488

ATOMIC WEAPONS REWARDS ACT OF 1954

AUGUST 14 (legislative day, AUGUST 5), 1954.—Ordered to be printed

Mr. HICKENLOOPER, from the Joint Committee on Atomic Energy, submitted the following

REPORT

[To accompany S. 3851]

The Joint Committee on Atomic Energy, to whom was referred the bill (S. 3851) to provide rewards for information concerning the illegal introduction into the United States, or the illegal manufacture or acquisition in the United States, of special nuclear material and atomic weapons, having considered the same, unanimously report favorably thereon with an amendment and recommend that the bill do pass.

The amendment strikes all after the enacting clause and substitutes the following:

That this Act may be cited as the "Atomic Weapons Rewards Act of 1954".

SEC. 2. Any person who furnishes original information to the United States—

(a) leading to the finding or other acquisition by the United States of any special nuclear material or atomic weapon which has been introduced into the United States, or which has been manufactured or acquired therein contrary to the laws of the United States, or

(b) with respect to an attempted introduction into the United States or an attempted manufacture or acquisition therein of any special nuclear material or atomic weapon, contrary to the laws of the United States,

shall be rewarded by the payment of an amount not to exceed $500,000.

SEC. 3. An Awards Board, consisting of the Secretary of the Treasury (who shall be Chairman), the Secretary of Defense, the Attorney General, the Director of Central Intelligence, and of one member of the Atomic Energy Commission designated by that Commission, shall determine whether any person furnishing information to the United States is entitled to any award and the amount thereof to be paid pursuant to section 2. In determining whether any person furnishing information to the United States is entitled to an award and the amount of such award, the Board shall take into consideration—

(a) whether the information is of the type specified in section 2, and

(b) whether the person furnishing the information was an officer or employee of the United States and, if so, whether the furnishing of such information was in the line of duty of that person.

Any award of $50,000 or more shall be subject to the approval of the President.

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SEC. 4. If the information leading to an award under section 3 is fi hed by an alien, the Secretary of State, the Attorney General, and the Dir of Central Intelligence, acting jointly, may determine that the entry of such alien into the United States is in the public interest and, in that event, such alien and the members of his immediate family may receive immigrant visas and may be admitted to the United States for permanent residence, notwithstanding the requirements of the Immigration and Nationality Act.

SEC. 5. The Board established under section 3 is authorized to hold such hearings and make, promulgate, issue, rescind, and amend such rules and regulations as may be necessary to carry out the purposes of this Act.

SEC. 6. Any awards granted under section 3 of this Act shall be certified by the Awards Board and, together with the approval of the President, in those cases where such approval is required, transmitted to the Director of Central Intelligence for payment out of funds appropriated or available for the administration of the National Security Act of 1947, as amended.

SEC. 7. As used in this Act—

(a) The term "atomic energy" means all forms of energy released in the course of nuclear fission or nuclear transformation.

(b) The term "atomic weapon" means any device utilizing atomic energy, exclusive of the means for transporting or propelling the device (where such means is a separable and divisible part of the device), the principal purpose of which is for use as, or for development of, a weapon, a weapon prototype, or a weapon test device.

(c) The term "special nuclear material" means plutonium, or uranium enriched in the isotope 233 or in the isotope 235, or any other material which is found to be special nuclear material pursuant to the provisions of the Atomic Energy Act of 1954.

(d) The term "United States", when used in a geographical sense, includes all Territories and possessions of the United States and the Canal Zone; except that in section 4 the term "United States" when so used shall have the meaning given to it in the Immigration and Nationality Act.

DANGERS OF COVERT INTRODUCTION OF ATOMIC WEAPONS OR MATERIALS FOR PRODUCING ATOMIC WEAPONS INTO THE UNITED STATES

The primary purpose of S. 3851 is to authorize the payment of rewards to persons who supply original information to the United States Government with respect to any attempt to introduce covertly atomic weapons or materials for producing atomic weapons into the United States or who supply original information leading to the finding of any illegally introduced atomic weapons or materials for producing atomic weapons.

Since the atomic weapon monopoly of the United States ended, it has been possible for an enemy nation to smuggle nuclear devices or special nuclear material into this country and thereby destroy vital targets prior to or following the commencement of hostilities. With passing time, the destructive yield of atomic weapons has increased with attendant advancements in the art of weaponeering. It must be assumed that potential enemies can now devise small atomic weapons, so constructed as to minimize the chance of detection by customs, by counterintelligence, or defense personnel. This potential constitutes a grave risk to the common defense and security of the United States.

Our Government will continue to exercise its full efforts in making available technical means of uncovering such secretly introduced devices. This bill will assist the effort by increasing our chance of learning in advance of such enemy action.

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genesis of the bill was a National Security Council recommendat . Subsequently, on July 29, 1954, the Attorney General in a communication to the Vice President (the Attorney General's letter will be found on p. 4) forwarded a draft bill. After introduction in the Senate and in the House of Representatives, the bill was referred to the Joint Committee on Atomic Energy. The Joint Committee on Atomic Energy considered the bill (S. 3851) at meetings on August 11, and heard witnesses from the executive branch.

Representatives of the Department of Justice, the Immigration and Naturalization Service, the Treasury Department, the Bureau of Customs, the Atomic Energy Commission, and the Central Intelligence Agency testified before the joint committee and recommended the enactment of legislation to meet these objectives. It was the view of the executive-branch witnesses that the proposed bill would materially strengthen the internal security of the United States and would provide an alert to our citizens to the need for vigilance. It would also, because of its provisions for reward and for sanctuary of aliens, encourage aliens to furnish information about such unauthorized and dangerous activities.

This legislative proposal has the endorsement of the Bureau of the Budget, and the joint committee has been advised that its enactment would be in accord with the program of the President.

PROVISIONS OF THE BILL

The bill provides (sec. 2) that the United States Government shall grant a reward, not to exceed $500,000, to any person who furnishes original information to the United States leading to the finding or other acquisition of atomic devices which are illegally in the country or any information regarding an attempt to introduce, manufacture, or acquire the same.

Section 3 authorizes an Awards Board to determine the merits of a claim for this reward. The Board will consist of the Secretary of the Treasury, the Secretary of Defense, the Attorney General, the Director of Central Intelligence, and of one member of the Atomic Energy Commission to be designated by the Commission. The President is to approve any award over $50,000.

The Board will determine whether or not the information is of the type specified in section 2 and further establish the merits of the claim of an officer or employee of the United States considering the scope of his duties.

Section 4 considers the possibility that a citizen of a foreign state who would furnish the information specified in section 2 could be the subject of reprisal. This section therefore provides authority for offering the sanctuary of a permanent residence in the United States to such an individual upon the joint determination of the Secretary of State, the Attorney General, and the Director of Central Intelligence that the entry and granting of visas to such an individual and to members of his immediate family is in the public interest. The provisions of this section were amended in the committee in view of the provisions of the Immigration and Nationality Act which was passed in 1950. The original provisions have been based on the provisions of the National Security Act of 1947. The present language parallels the provisions in section 212 of the Immigration Act, and

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the Director of Immigration and Naturalization under the te[illegible] of the act is responsible for all of the functions assigned to the At[illegible]ney General.

Section 5 grants administrative powers to the Awards Board.

Section 6 provides that upon certification of the Awards Board and approval by the President, the reward is payable out of appropriations for the administration of the National Security Act of 1947.

Section 7 recites the definitions of the terms used in the act and defines the terms "atomic energy," "atomic weapon," "special nuclear material" and "United States." These definitions are based on the definitions reflected in the proposed Atomic Energy Act of 1954 or in the Immigration and Nationality Act.

JULY 29, 1954.

The VICE PRESIDENT,
United States Senate, Washington, D. C.

DEAR MR. VICE PRESIDENT: There is attached for your consideration and appropriate action a legislative proposal to provide rewards for information concerning the illegal introduction into the United States, or the illegal manufacture or acquisition in the United States, of special nuclear material and atomic weapons.

The Department of Justice has for some time been studying, with other departments and agencies primarily concerned, the problem of the possible illegal introduction into the United States, and the illegal manufacture and acquisition in the United States, of various atomic materials or weapons, the presence of which would constitute a threat to the security of the Nation and the welfare of its people.

The attached bill is designed to set up a system of rewards for original information leading to the acquisition by the United States of special nuclear material or atomic weapons which have been illegally brought into the United States, its Territories or possessions, or the District of Columbia, or which have been illegally manufactured or acquired therein. It is also designed to set up a system of rewards for original information with respect to attempts illegally to introduce, manufacture, or acquire such materials or weapons.

It is the view of the Department of Justice and the other agencies concerned that this proposal will materially strengthen the internal security of the United States by alerting the people thereof to the need for vigilance, and by providing a monetary reward for informants. It will likewise, by reason of its provisions for reward and for immigration to the United States for permanent residence, encourage aliens to furnish information about the unauthorized introduction, manufacture, or acquisition of special nuclear material or atomic weapons.

This legislation implements a National Security Council recommendation, and the Bureau of the Budget has advised that its enactment would be in accord with the program of the President.

Sincerely,

HERBERT BROWNELL, Jr.,
Attorney General.

CHANGES IN EXISTING LAW

In compliance with subsection (4) of rule XXIX of the Standing Rules of the Senate, changes in existing law made by the bill accompanying this report are shown as follows (new matter is printed in italics):

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Atomic Weapons Rewards Act of 1954".

SEC. 2. Any person who furnishes original information to the United States—

(a) leading to the finding or other acquisition by the United States of any special nuclear material or atomic weapon which has been introduced into the United States, or which has been manufactured or acquired therein contrary to the laws of the United States, or

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(c) with respect to an attempted introduction into the United States or an attempted manufacture or acquisition therein of any special nuclear material or atomic weapon, contrary to the laws of the United States,

shall be rewarded by the payment of an amount not to exceed $500,000.

SEC. 3. An Awards Board, consisting of the Secretary of the Treasury (who shall be the Chairman), the Secretary of Defense, the Attorney General, the Director of Central Intelligence, and of one member of the Atomic Energy Commission designated by that Commission, shall determine whether any person furnishing information to the United States is entitled to any award and the amount thereof to be paid pursuant to section 2. In determining whether any person furnishing information to the United States is entitled to an award and the amount of such award, the Board shall take into consideration—

(a) whether or not the information is of the type specified in section 2, and

(b) whether the person furnishing the information was an officer or employee of the United States and, if so, whether the furnishing of such information was in the line of duty of that person.

Any reward of $50,000 or more shall be approved by the President.

SEC. 4. If the information leading to an award under section 3 is furnished by an alien, the Secretary of State, the Attorney General, and the Director of Central Intelligence, acting jointly, may determine that the entry of such alien into the United States is in the public interest and, in that event, such alien and the members of his immediate family may receive immigrant visas and may be admitted to the United States for permanent residence, notwithstanding the requirements of the Immigration and Nationality Act.

SEC. 5. The Board established under section 3 is authorized to hold such hearings and make, promulgate, issue, rescind, and amend such rules and regulations as may be necessary to carry out the purposes of this Act.

SEC. 6. Any awards granted under section 3 of this Act shall be certified by the Awards Board and, together with the approval of the President in those cases where such approval is required, transmitted to the Director of Central Intelligence for payment out of funds appropriated or available for the administration of the National Security Act of 1947, as amended.

SEC. 7. As used in this Act—

(a) The term "atomic energy" means all forms of energy released in the course of nuclear fission or nuclear transformation.

(b) The term "atomic weapon" means any device utilizing atomic energy, exclusive of the means for transporting or propelling the device (where such means is a separable and divisible part of the device), the principal purpose of which is for use as, or for development of, a weapon, a weapon prototype, or a weapon test device.

(c) The term "special nuclear material" means plutonium, or uranium enriched in the isotope 233 or in the isotope 235, or any other material which is found to be special nuclear material pursuant to the provisions of the Atomic Energy Act of 1954.

(d) The term "United States", when used in a geographical sense, includes all Territories and possessions of the United States and the Canal Zone: except that in section 4 the term "United States" when so used shall have the meaning given to it in the Immigration and Nationality Act.

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83D CONGRESS 2d Session } HOUSE OF REPRESENTATIVES { REPORT No. 2660

ATOMIC WEAPONS REWARDS ACT OF 1954

AUGUST 16, 1954.—Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

Mr. COLE of New York, from the Joint Committee on Atomic Energy, submitted the following

REPORT

[To accompany H. R. 10203]

The Joint Committee on Atomic Energy, to whom was referred the bill (H. R. 10203) to provide rewards for information concerning the illegal introduction into the United States, or the illegal manufacture or acquisition in the United States, of special nuclear material and atomic weapons, having considered the same, unanimously report favorably thereon with an amendment and recommend that the bill do pass.

The amendment strikes all after the enacting clause and substitutes the following:

That this Act may be cited as the "Atomic Weapons Rewards Act of 1954".

SEC. 2. Any person who furnishes original information to the United States—

(a) leading to the finding or other acquisition by the United States of any special nuclear material or atomic weapon which has been introduced into the United States, or which has been manufactured or acquired therein contrary to the laws of the United States, or

(b) with respect to an attempted introduction into the United States or an attempted manufacture or acquisition therein of any special nuclear material or atomic weapon, contrary to the laws of the United States,

shall be rewarded by the payment of an amount not to exceed $500,000.

SEC. 3. An Awards Board, consisting of the Secretary of the Treasury (who shall be Chairman), the Secretary of Defense, the Attorney General, the Director of Central Intelligence, and of one member of the Atomic Energy Commission designated by that Commission, shall determine whether any person furnishing information to the United States is entitled to any award and the amount thereof to be paid pursuant to section 2. In determining whether any person furnishing information to the United States is entitled to an award and the amount of such award, the Board shall take into consideration—

(a) whether the information is of the type specified in section 2, and

(b) whether the person furnishing the information was an officer or employee of the United States and, if so, whether the furnishing of such information was in the line of duty of that person.

Any award of $50,000 or more shall be subject to the approval of the President.

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SEC. 4. If the information leading to an award under section 3 is f[illegible]shed by an alien, the Secretary of State, the Attorney General, and the Di[illegible]r of Central Intelligence, acting jointly, may determine that the entry of such alien into the United States is in the public interest and, in that event, such alien and the members of his immediate family may receive immigrant visas and may be admitted to the United States for permanent residence, notwithstanding the requirements of the Immigration and Nationality Act.

SEC. 5. The Board established under section 3 is authorized to hold such hearings and make, promulgate, issue, rescind, and amend such rules and regulations as may be necessary to carry out the purposes of this Act.

SEC. 6. Any awards granted under section 3 of this Act shall be certified by the Awards Board and, together with the approval of the President, in those cases where such approval is required, transmitted to the Director of Central Intelligence for payment out of funds appropriated or available for the administration of the National Security Act of 1947, as amended.

SEC. 7. As used in this Act—

(a) The term "atomic energy" means all forms of energy released in the course of nuclear fission or nuclear transformation.

(b) The term "atomic weapon" means any device utilizing atomic energy, exclusive of the means for transporting or propelling the device (where such means is a separable and divisible part of the device), the principal purpose of which is for use as, or for development of, a weapon, a weapon prototype, or a weapon test device.

(c) The term "special nuclear material" means plutonium, or uranium enriched in the isotope 233 or in the isotope 235, or any other material which is found to be special nuclear material pursuant to the provisions of the Atomic Energy Act of 1954.

(d) The term "United States", when used in a geographical sense, includes all Territories and possessions of the United States and the Canal Zone; except that in section 4 the term "United States" when so used shall have the meaning given to it in the Immigration and Nationality Act.

DANGERS OF COVERT INTRODUCTION OF ATOMIC WEAPONS OR MATERIALS FOR PRODUCING ATOMIC WEAPONS INTO THE UNITED STATES

The primary purpose of H. R. 10203 is to authorize the payment of rewards to persons who supply original information to the United States Government with respect to any attempt to introduce covertly atomic weapons or materials for producing atomic weapons into the United States or who supply original information leading to the finding of any illegally introduced atomic weapons or materials for producing atomic weapons.

Since the atomic weapon monopoly of the United States ended, it has been possible for an enemy nation to smuggle nuclear devices or special nuclear material into this country and thereby destroy vital targets prior to or following the commencement of hostilities. With passing time, the destructive yield of atomic weapons has increased with attendant advancements in the art of weaponeering. It must be assumed that potential enemies can now devise small atomic weapons, so constructed as to minimize the chance of detection by customs, by counterintelligence, or defense personnel. This potential constitutes a grave risk to the common defense and security of the United States.

Our Government will continue to exercise its full efforts in making available technical means of uncovering such secretly introduced devices. This bill will assist the effort by increasing our chance of learning in advance of such enemy action.

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The genesis of the bill was a National Security Council recommendation. Subsequently, on July 29, 1954, the Attorney General in a communication to the Vice President (the Attorney General's letter will be found on p. 4) forwarded a draft bill. After introduction in the Senate and in the House of Representatives, the bill was referred to the Joint Committee on Atomic Energy. The Joint Committee on Atomic Energy considered the bill (H. R. 10203) at meetings on August 11, and heard witnesses from the executive branch.

Representatives of the Department of Justice, the Immigration and Naturalization Service, the Treasury Department, the Bureau of Customs, the Atomic Energy Commission, and the Central Intelligence Agency testified before the Joint Committee and recommended the enactment of legislation to meet these objectives. It was the view of the executive-branch witnesses that the proposed bill would materially strengthen the internal security of the United States and would provide an alert to our citizens to the need for vigilance. It would also, because of its provisions for reward and for sanctuary of aliens, encourage aliens to furnish information about such unauthorized and dangerous activities.

This legislative proposal has the endorsement of the Bureau of the Budget, and the Joint Committee has been advised that its enactment would be in accord with the program of the President.

PROVISIONS OF THE BILL

The bill provides (sec. 2) that the United States Government shall grant a reward, not to exceed $500,000, to any person who furnishes original information to the United States leading to the finding or other acquisition of atomic devices which are illegally in the country or any information regarding an attempt to introduce, manufacture, or acquire the same.

Section 3 authorizes an Awards Board to determine the merits of a claim for this reward. The Board will consist of the Secretary of the Treasury, the Secretary of Defense, the Attorney General, the Director of Central Intelligence, and of one member of the Atomic Energy Commission to be designated by the Commission. The President is to approve any award over $50,000.

The Board will determine whether or not the information is of the type specified in section 2 and further establish the merits of the claim of an officer or employee of the United States considering the scope of his duties.

Section 4 considers the possibility that a citizen of a foreign state who would furnish the information specified in section 2 could be the subject of reprisal. This section therefore provides authority for offering the sanctuary of a permanent residence in the United States to such an individual upon the joint determination of the Secretary of State, the Attorney General, and the Director of Central Intelligence that the entry and granting of visas to such an individual and to members of his immediate family is in the public interest. The provisions of this section were amended in the committee in view of the provisions of the Immigration and Nationality Act which was passed in 1950. The original provisions have been based on the provisions of the National Security Act of 1947. The present language parallels the provisions in section 212 of the Immigration Act, and

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the Director of Immigration and Naturalization under the t[illegible] of the act is responsible for all of the functions assigned to the Attorney General.

Section 5 grants administrative powers to the Awards Board.

Section 6 provides that upon certification of the Awards Board and approval by the President, the reward is payable out of appropriations for the administration of the National Security Act of 1947.

Section 7 recites the definitions of the terms used in the act and defines the terms "atomic energy," "atomic weapon," "special nuclear material" and "United States." These definitions are based on the definitions reflected in the proposed Atomic Energy Act of 1954 or in the Immigration and Nationality Act.

JULY 29, 1954.

The VICE PRESIDENT,
United States Senate, Washington, D. C

DEAR MR. VICE PRESIDENT: There is attached for your consideration and appropriate action a legislative proposal to provide rewards for information concerning the illegal introduction into the United States, or the illegal manufacture or acquisition in the United States, of special nuclear material and atomic weapons.

The Department of Justice has for some time been studying, with other departments and agencies primarily concerned, the problem of the possible illegal introduction into the United States, and the illegal manufacture and acquisition in the United States, of various atomic materials or weapons, the presence of which would constitute a threat to the security of the Nation and the welfare of its people.

The attached bill is designed to set up a system of rewards for original information leading to the acquisition by the United States of special nuclear material or atomic weapons which have been illegally brought into the United States, its Territories or possessions, or the District of Columbia, or which have been illegally manufactured or acquired therein. It is also designed to set up a system of rewards for original information with respect to attempts illegally to introduce, manufacture, or acquire such materials or weapons.

It is the view of the Department of Justice and the other agencies concerned that this proposal will materially strengthen the internal security of the United States by alerting the people thereof to the need for vigilance, and by providing a monetary reward for informants. It will likewise, by reason of its provisions for reward and for immigration to the United States for permanent residence, encourage aliens to furnish information about the unauthorized introduction, manufacture, or acquisition of special nuclear material or atomic weapons.

This legislation implements a National Security Council recommendation, and the Bureau of the Budget has advised that its enactment would be in accord with the program of the President.

Sincerely,

HERBERT BROWNELL, Jr.,
Attorney General.

CHANGES IN EXISTING LAW

In compliance with clause 3 of rule XIII of the Rules of the House of Representatives, changes in existing law made by the bill accompanying this report are shown as follows (new matter is printed in italics):

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Atomic Weapons Rewards Act of 1954".

SEC. 2. Any person who furnishes original information to the United States—

(a) leading to the finding or other acquisition by the United States of any special nuclear material or atomic weapon which has been introduced into the United States, or which has been manufactured or acquired therein contrary to the laws of the United States, or

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(b) with respect to an attempted introduction into the United States or an attempted manufacture or acquisition therein of any special nuclear material or atomic weapon, contrary to the laws of the United States,

shall be rewarded by the payment of an amount not to exceed $500,000.

SEC. 3. An Awards Board, consisting of the Secretary of the Treasury (who shall be the Chairman), the Secretary of Defense, the Attorney General, the Director of Central Intelligence, and of one member of the Atomic Energy Commission designated by that Commission, shall determine whether any person furnishing information to the United States is entitled to any award and the amount thereof to be paid pursuant to section 2. In determining whether any person furnishing information to the United States is entitled to an award and the amount of such award, the Board shall take into consideration—

(a) whether or not the information is of the type specified in section 2, and

(b) whether the person furnishing the information was an officer or employee of the United States and, if so, whether the furnishing of such information was in the line of duty of that person.

Any reward of $50,000 or more shall be approved by the President.

SEC. 4. If the information leading to an award under section 3 is furnished by an alien, the Secretary of State, the Attorney General, and the Director of Central Intelligence, acting jointly, may determine that the entry of such alien into the United States is in the public interest and, in that event, such alien and the members of his immediate family may receive immigrant visas and may be admitted to the United States for permanent residence, notwithstanding the requirements of the Immigration and Nationality Act.

SEC. 5. The Board established under section 3 is authorized to hold such hearings and make, promulgate, issue, rescind, and amend such rules and regulations as may be necessary to carry out the purposes of this Act.

SEC. 6. Any awards granted under section 3 of this Act shall be certified by the Awards Board and, together with the approval of the President in those cases where such approval is required, transmitted to the Director of Central Intelligence for payment out of funds appropriated or available for the administration of the National Security Act of 1947, as amended.

SEC. 7. As used in this Act—

(a) The term "atomic energy" means all forms of energy released in the course of nuclear fission or nuclear transformation.

(b) The term "atomic weapon" means any device utilizing atomic energy, exclusive of the means for transporting or propelling the device (where such means is a separable and divisible part of the device), the principal purpose of which is for use as, or for development of, a weapon, a weapon prototype, or a weapon test device.

(c) The term "special nuclear material" means plutonium, or uranium enriched in the isotope 233 or in the isotope 235, or any other material which is found to be special nuclear material pursuant to the provisions of the Atomic Energy Act of 1954.

(d) The term "United States", when used in a geographical sense, includes all Territories and possessions of the United States and the Canal Zone; except that in section 4 the term "United States" when so used shall have the meaning given to it in the Immigration and Nationality Act.

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DEPARTMENT OF EXTERNAL AFFAIRS, CANADA.

NUMBERED LETTER

TO: [redacted] UNDER-SECRETARY OF STATE FOR EXTERNAL AFFAIRS, OTTAWA, CANADA.

FROM: The Canadian Embassy, Washington, D. C.

Reference:

Subject: United States Atomic Energy Legislation.

Security: none

No: 1479

Date: August 16, 1954.

Enclosures: 5

Air or Surface Mail:

Post File No:

Ottawa File No. 50219-D-40

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1 2 3 4 5 6 7 8 9 10

References

18 AUG 1954

Pres AECB
Pres AEA/CDA
CCOS
CDRB

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J.7

We enclose five copies of S.3851 which is a bill to provide rewards for information concerning the illegal introduction into the United States, or the illegal manufacture or acquisition in the United States, of special nuclear material and atomic weapons.

The Embassy.

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Ext. 182A (Rev. 2/52)

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83D CONGRESS
2D SESSION

S. 3851

IN THE SENATE OF THE UNITED STATES

AUGUST 10 (legislative day, AUGUST 5), 1954

Mr. HICKENLOOPER introduced the following bill; which was read twice and referred to the Joint Committee on Atomic Energy

A BILL

To provide rewards for information concerning the illegal introduction into the United States, or the illegal manufacture or acquisition in the United States, of special nuclear material and atomic weapons.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Rewards Act of 1954".

SEC. 2. Any person not an officer or an employee of the United States (1) who furnishes original information leading to the finding or other acquisition by the United States of any special nuclear material or atomic weapon which has been introduced into the United States, its Territories or possessions, or the District of Columbia, or which has been

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manufactured or acquired therein, contrary to the laws of the United States, or (2) who furnishes original information to the United States with respect to an attempted introduction into the United States, its Territories or possessions, or the District of Columbia, or an attempted manufacture or acquisition therein, of any special nuclear material or atomic weapon, contrary to the laws of the United States, shall be rewarded by the payment of an amount not to exceed $500,000. If such information has been furnished by an alien, the Attorney General and the Commissioner of Immigration and Naturalization may determine that the entry of the particular alien into the United States for permanent residence is in the best interests of the United States and that such alien and his immediate family shall be permitted to enter the United States for permanent residence without regard to their inadmissibility under any other laws and regulations, or to their failure to comply with such laws and regulations pertaining to admissibility.

SEC. 3. A Board consisting of the members of the Atomic Energy Commission, the Attorney General, and the Secretary of Defense shall determine the amount of reward to be paid in each case pursuant to section 2 of this Act. Any such rewards shall be paid out of funds appropriated for the administration of the Atomic Energy Act of 1946.

SEC. 4. Any officer or employee of the United States

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who directly or indirectly receives, accepts, or contracts for any portion of the reward money which may accrue to any person pursuant to this Act, shall be guilty of a felony and upon conviction thereof shall be punished by a fine of not more than $10,000 or by imprisonment for not more than five years, or both, and shall, moreover, be thereafter ineligible to hold any office, or place of honor, profit, or trust created by the Constitution or laws of the United States. If such officer or employee has received any portion of money paid as a reward he shall, in addition to the foregoing, be fined the amount of money he has received.

SEC. 5. As used in this Act, the term "special nuclear material" means plutonium, or uranium enriched in the isotope 233 or in the isotope 235, or any other material which the Atomic Energy Commission determines to be special nuclear material for the purposes of this Act.

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83D CONGRESS
2D SESSION

S. 3851

A BILL

To provide rewards for information concerning the illegal introduction into the United States, or the illegal manufacture or acquisition in the United States, of special nuclear material for weapons.

By [redacted]ER

AUGUST 10 (legislative day, AUGUST 5), 1954
Read twice and referred to the Joint Committee on Atomic Energy

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RESTRICTED

RESTRICTED (10)

DEPARTMENT OF NATIONAL DEFENCE
CANADA

DEFENCE RESEARCH BOARD

Ottawa, Ontario,

9 July, 1954.

50219-D-40
52-50

Under-Secretary of State for External Affairs,
East Block,
Ottawa, Ontario.

ATTENTION: Mr. W.H. Barton

File
HeB.

D-1

13 JUL 1954

Dear Mr. Barton:

With reference to our telephone conversation this morning, the Defence Research Member of C.J.S., Washington, has informed us by cable that two further amendments have been added to the Bill now before the U.S. Congress to amend the U.S. Atomic Energy Act of 1946. The amendments appear under Senate Calendar No. 1710, and are as follows:

Under Section 142 dealing with classification and declassification of Restricted data, there is added sub-paragraph (e) which reads:

> "The Commission shall remove from the Restricted Data category such information concerning the Atomic Energy Programs of other nations as the Commission and the Director of Central Intelligence jointly determine to be necessary to carry out the provisions of Section 102 (d) of the National Security Act of 1947, as amended, and can be adequately safeguarded as defense information".

Under Section 144 dealing with International Cooperation, the provision of sub-paragraph (b) now reads:

> "Provided, however, that no such co-operation shall involve communication of Restricted Data relating to the design or fabrication of Atomic Weapons except with regard to external characteristics, including size, weight, and shape, yields and effects, and systems employed in the delivery or use thereof but not including any data in these categories, unless in the joint agreement of the Atomic Energy Commission and the Department of Defense, such data will not reveal important information concerning the design or fabrication of the nuclear components of an atomic weapon; and provided further, that the co-operation is undertaken pursuant to an agreement entered into in accordance with Section 123".

As regards the first amendment, it presumably refers only to intelligence information about the Atomic Energy Programmes of other countries, and would not embrace information transmitted to the U.S.A. by countries, such as Canada and U.K., about their Atomic Energy Programmes. However, as it stands, the amendment does not draw this distinction, and I think the Embassy might inquire about it.

As regards the second amendment, you will see that it will now be possible for Canada to receive information about the yields and effects and the systems employed in the delivery or use of particular weapons. This is a very welcome improvement which will greatly assist military planning.

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However, the amendment still contains the phrase "provided that the co-operation is undertaken pursuant to an agreement entered into in accordance with Section 123". The trouble with Section 123 is that it contains a Sub-Section A (3) which says, "a guaranty by the co-operating party of any material to be transferred pursuant to such an agreement, will not be used for atomic weapons, or for research or development on atomic weapons, or for any other military purpose." Now although "special nuclear material", "by-product material" and "source material" are all defined in the Act, the word "material" is not defined. Our lawyers should have a look at it, but it seems to me that the Act at the moment contradicts itself, and that if we obtain information or material under Section 144, we could not use it under the terms of an agreement made under Section 123 for any military purposes. Perhaps the Embassy could inquire about this also.

Since the first point is the concern of the Atomic Energy Control Board and the second point is a legal one, I believe it would be better for your people to seek clarification, rather than for Canadian Joint Staff to do so. I am, of course, sending a copy of this letter to Defence Research Member in Washington and also a copy to Dr. Dewar in the Atomic Energy Control Board.

Yours sincerely,

A.H. Layman

for Chairman, Defence Research Board.

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via air bag

SECRET

May 14, 1954

50219-D-40
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Dear Jim,

Further to Saul's letter of yesterday concerning the correspondence recently exchanged with Members of Parliament on the subject of atomic and hydrogen weapons, I am attaching copy of the Defence Research Board letter of May 3 commenting on the letter which Dr. K. Buckthought addressed to Mr. Johnson on April 12.

Yours sincerely,

J. R. B. CHAPUT

James George, Esq.,
c/o The Office of the
High Commissioner for Canada,
London, England.

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Defence Liaison (1)/W.H.Barton/jf

DEPARTMENT OF EXTERNAL AFFAIRS, CANADA. *(FILE COPY)*

NUMBERED LETTER

TO: THE PERMANENT CANADIAN DELEGATE TO THE UNITED NATIONS, NEW YORK

FROM: THE UNDER-SECRETARY OF STATE FOR EXTERNAL AFFAIRS, OTTAWA, CANADA.

Reference: Your letter No. 327 of April 19, 1954

Subject: The Hydrogen Bomb - A Canadian Physicist's Views.

Security: SECRET

No: D 293

Date: May 6, 1954

Enclosures: one

Air or Surface Mail:

Post File No:

Ottawa File No. 50219-D-40	
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References

U.N. Division

Dm 7
5/7/54

We have referred your letter of April 19, 1954, and the attached letter from Dr. K. Buckthought to the Defence Research Board. Attached is a copy of the reply received. Please note particularly the caution in the final paragraph of the DRB letter.

P. A. BEAULIEU

ACTING UNDER-SECRETARY OF STATE
FOR EXTERNAL AFFAIRS

Internal Circulation

Distribution to Posts

Ext. 181B (Rev. 2/52)

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Mr Baxter
W.H. Barton DL(1)
for
50219D40
File
W.M.B

50219-D-40
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Sub copy N.

, May 6, 1954.

Dear Mr. Henry,

I refer to our telephone conversations regarding the delegation which called on you to discuss the H-bomb.

2. Enclosed is a copy of the "Geneva Protocol of June 17, 1925 for the prohibition of the use in war of asphyxiating, poisonous or other gases and of bacteriological methods of warfare". You will note that among the countries which have ratified this Protocol are Canada, the United Kingdom and the Soviet Union. The United States signed but did not ratify the Protocol and is therefore not a party to it. (If you do not wish to retain the enclosed copy, please return it to me).

3. The Protocol prohibits the use of poison gas and bacteriological methods of warfare but does not prohibit the manufacture of these weapons.

4. The delegation also mentioned to you the views of Dr. K. Buckthought, which he had sent to Mr. Johnson, the Permanent Representative of Canada to the United Nations in New York. Dr. Buckthought is a member of the staff of the Physics Department of the University of Toronto. Enclosed is a copy of his letter of April 12, 1954 to Mr. Johnson enclosing a memorandum by Dr. Buckthought entitled "The Radioactivity of the Hydrogen Bomb". I understand that Dr. Buckthought has made his memorandum available to many people and that parts of it have been reproduced in the press.

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C.J. Henry, Esquire, M.P.,
House of Commons,
Ottawa.

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5. Finally, I wish to confirm that the recently created sub-committee of the United Nations Disarmament Commission will commence work in London on May 13th. The sub-committee is expected to work for one or two months before reporting to the Disarmament Commission. The members of the sub-committee are -- the United Kingdom, the United States, France, Canada and the Soviet Union. It was recently announced in the House of Commons that Mr. Pearson will be able to attend some of the meetings of the sub-committee and, when he is not there, Canada will be represented by Mr. H.A. Robertson, the High Commissioner in London. It is assumed that the sub-committee will be discussing all aspects of disarmament, including the problems of atom bombs and H-bombs. You have of course read what Mr. Pearson said on the subject recently before the Standing Committee on External Affairs.

Yours sincerely,

M. H. WERSHOF

M.H. WERSHOF
Acting Assistant Under-Secretary of State
for External Affairs.

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CANADA

DEFENCE RESEARCH BOARD

SECRET

OFFICE OF THE CHAIRMAN

OTTAWA

3 May 1954

The Under-Secretary of State for External Affairs,
East Block,
Ottawa, Ontario.

J 18

50219-D-40
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Attention: Mr. Benjamin Rogers.

Hydrogen Bomb - A Canadian Physicist's Views

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MAY 3 1954

I refer to your letter of 23 April, 1954, file No. 50219-D-40 enclosing copies of a letter from Dr. Buckthought to Mr. D. M. Johnson and of his reply.

2. The nature of the physical processes used in the so-called Hydrogen Bomb is a closely guarded secret, in spite of a great many public announcements and speculations. Dr. Buckthought mentions certain reactions which may or may not form the basis of the explosion, and there are others which he does not mention.

3. Our scientists would disagree with Dr. Buckthought on certain points, and their opinions would tend to make the picture less gloomy than Dr. Buckthought paints it. This is not to say that it is not very serious.

4. The important point is, however, that the dangers to health which Dr. Buckthought mentions are being very carefully studied by the U.S.A., including the actual distribution of radio-active material after explosions as opposed to theoretical distribution. Dr. Buckthought mentions Carbon 14, but the principal danger, if any, would come from something quite different.

5. Canadian scientists are, of course, studying the radioactive content of the atmosphere in Canada continuously. Very little radioactivity indeed has reached Canada as a result of the recent tests in the Pacific -- much less than from Russian test explosions, or from U.S. tests in Nevada.

6. It is very doubtful whether the cobalt bomb which Dr. Buckthought postulates would be a practicable military weapon even if it could be built. Dr. Buckthought himself says that nature loves an exception, and the risks of the radio-active material falling on the attacking country might make it too dangerous to contemplate as a weapon.

Dr. Buckthought can't have it both ways -- if meteorology is so imprecise as to put populations in danger from the Pacific tests, it can't be precise enough to justify the use of a cobalt bomb.

7. You may communicate these comments under secret cover to Mr. Johnson for his own information, but the matter should on no account be discussed with Dr. Buckthought. I suggest he should simply be thanked for his interest in a matter of very great importance.

Vice Chairman
Defence Research Board

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Defence Liaison (1)/W.H.Barton/jf

50219-D-40
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File No. 50219-D-40.

April 23, 1954.

Chairman, Defence Research Board,
Department of National Defence,
"A" Building,
Ottawa, Ontario.

Hydrogen Bomb-A Canadian Physicist's Views

Attached is a copy of letter No. 327, dated April 19, 1954, from the Permanent Delegate of Canada to the United Nations in New York enclosing a copy of correspondence between him and Dr. K. Buckthought of the Physics Department, University of Toronto, concerning the radioactivity hazards of the hydrogen bomb.

2. Mr. Johnson has asked, for his own edification, if he could be given some appraisal of whether Dr. Buckthought's calculations are more or less accurate. I should be grateful if you would inform me on this point in order that I might answer Mr. Johnson's enquiry.

BENJAMIN ROGERS
FOR THE
Acting Under-Secretary of State
for External Affairs

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FILE COPY

M.H. WERSHOF/YSJ

April 20, 1954.

50219-D-40
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MEMORANDUM FOR MR. MACKAY:

Showing of Film of the First U.S. H-Bomb Explosion.

The Department of National Health and Welfare has obtained a copy of the coloured motion picture film of "Operation Ivy" and a few days ago a special showing was arranged by that department for Mr. Pearson. Mr. A.C. Smith told me at the time that Dr. Davidson would be willing to arrange for a further showing in the East Block if this Department was so desirous.

If you think this would be a good idea you might wish to ask Information Division to make the necessary arrangements. I suppose it would be desirable to make the showing open to as many officers as possible.

I understand that the film runs about eighteen minutes.

M. H. WERSHOF

M.H.W.

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Ext. 182A

OTTAWA FILE
No. 50219-D-40

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SECURITY CLASSIFICATION
Unclassified

Letter No. 327

Date. April 19, 1954.

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21 APR 1954

FROM: THE PERMANENT CANADIAN DELEGATION TO THE UNITED NATIONS, NEW YORK.

TO: THE UNDER-SECRETARY OF STATE FOR EXTERNAL AFFAIRS, CANADA.

Reference.....

Subject: Hydrogen Bomb -- A Canadian Physicist's Views.

Dr. K. Buckthought of the Physics Department, University of Toronto, wrote to me recently enclosing a personal memorandum on the radioactivity hazards of the hydrogen bomb. I did not feel I had sufficient competence to judge his memorandum and have therefore sent him a non-committal reply, copy attached.

For my own edification, I should be grateful if you would send me some appraisal of whether Dr. Buckthought's calculations are more or less accurate.

David M. Johnson
THE PERMANENT DELEGATION.

Copies Referred To.....

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J. George/ams

FILE COPY

Room 504,
620 Fifth Avenue,
New York 20, N.Y.

April 19, 1954.

Dear Dr. Buckthought,

I wish to acknowledge your letter of April 12 enclosing a memorandum on the radio-activity dangers of the hydrogen bomb.

In view of the great importance of this subject, I have referred your letter to the Department of External Affairs in Ottawa.

Yours sincerely,

D. M. Johnson,
Permanent Representative of Canada
to the United Nations.

K. Buckthought, MA, PhD,
121 Carlton Street,
Toronto 2; Ontario,
Canada.

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COPY

FILE COPY

K. Buckthought, M.A., Ph.D.,
121 Carlton St.,
Toronto 2, Ont.,
CANADA.

Apr. 12/54.

D.M. Johnson,
Permanent Representative, Canada,
United Nations,
New York, N.Y.,
U.S.A.

Dear Sir:-

In view of the current deliberations on control of the thermonuclear bomb, I would like to call your attention to the considerations set forth in the enclosed memorandum. The seriousness of the problem places an obligation on every scientist to contribute what he can to the discussion, and it is in this spirit that the enclosed has been framed.

I wish it to be understood that the views expressed are my own, and not the official point of view, if any, of the Physics Department, University of Toronto, of which I am a staff member.

Trusting that this will be helpful to you in your capacity as Canada's representative at the United Nations, I remain,

Yours sincerely,
(Sgd.) K. Buckthought.

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The Radioactivity of the Hydrogen Bomb.

K. Buckthought, M.A., Ph.D.

In view of the unexpected results of the Mar. 1 hydrogen bomb test, it is essential to consider the risks involved in future explosions of this sort, and in the use of thermonuclear bombs in warfare.

We consider here only that characteristic of the hydrogen bomb that makes it rather more than a bomb - its radioactivity. We can discuss the mechanics of the bomb on the basis of published non-secret data; most of the nuclear reactions involved were studied in the laboratory long before World War II.

In 1932, Cockroft and Walton bombarded lithium with protons accelerated to energies of a few hundred thousand electron volts. They thus achieved the transmutation of lithium nuclei to helium nuclei, with the liberation of 17 Mev (million electron volts) per nuclear process. This energy represents a conversion of mass to energy, in accordance with Relativity theory.

Now suppose we imagine the compound lithium hydride heated gradually to a temperature of several million degrees. As the temperature rises, a stage is reached where the energy of thermal agitation of the atoms becomes greater than the binding energy of the lithium hydride (LiH) molecule, so that frequent collisions occur between separate lithium and hydrogen atoms. At a still higher temperature the particles will have the thermal kinetic energy corresponding to the Cockroft-Welton experiment, and helium nuclei form, with tremendous energy output. This is analogous to the speeding up of chemical reactions by heating; once a certain energy barrier has been overcome by thermal agitation, the reaction proceeds rapidly.

The necessary high temperature is achieved by the explosion of a fission-type atomic bomb. It is in principle

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merely necessary to surround such a bomb with a shell of lithium hydride to produce a greater energy output than is possible with the "old-fashioned" fission bomb alone. The latter is of course limited by its critical mass, characteristic of all fission processes. With the fusion process, we may increase the mass of material used, and hence the energy output, almost without limit. Lithium is one of the earth's common elements and thus the production of fusion bombs is not limited by the availability of materials.

There are several other fusion processes available. Those employing only hydrogen isotopes (deuterium and tritium) have the disadvantage that the material must be in liquid form and thus at very low temperature, requiring much bulky low temperature apparatus. Also tritium has to be manufactured, at a cost of $1,000,000 a pound.

The choice of process used raises a fundamental question. If lithium deuteride (LiD) is used instead of LiH, the resulting fusion produces a neutron for every deuteron consumed. The neutrons emitted turn normally harmless, familiar elements in the vicinity into deadly radio-isotopes. It has been suggested by William L. Laurence (New York Times, Apr. 7/54), that such a process (using lithium 6) is in fact feasible - it would have the advantage, which might be decisive, that tritium is produced in the explosion, with a great gain in efficiency.

But the actual process used is a secret, presumably not even known to America's allies. However, the results of the Mar. 1 test certainly suggest some sort of neutron-producing bomb, i.e. one leaving behind considerable radioactivity.

The most important lasting by-product of a mid-air explosion will usually be carbon 14, produced by reaction of neutrons with nitrogen of the air. Carbon 14 has a half-life of 5,000 years. Thus every such explosion pollutes the air with

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radioactivity, effective for thousands of years. In a few years, the carbon 14 will have mixed uniformly with the carbon dioxide of the air. The resulting radioactivity has been calculated by J.R. Arnold (Bulletin of the Atomic Scientists, Oct. 1950, p. 290-292). He finds an intensity of 0.1 roentgen per week resulting from a yield of 50 tons of neutrons. The safe limit for human beings is generally accepted as 0.3 roentgen per week (International Commission on Radiological Protection, London meeting, July 1950). Now a yield of say 100-200 tons of neutrons, requiring 500-1000 tons of bomb material, is well within the present capabilities of major countries like the U.S. or the U.S.S.R. Thus a long series of H - bomb explosions could expose every human on earth to a significant dose of radioactivity.

However, the "real and present danger" of the H - bomb tests is not revealed by such calculations, which assume a uniform distribution over the earth's atmosphere. Such a distribution will be achieved in time, but there is always a risk of a high concentration of radioactive products falling out over inhabited areas a few days after the explosion.

Such a fall-out may occur in several ways. The radioactive particles may be large enough to settle out by themselves; they may become attached to raindrops, snowflakes, dust or industrial grime. In any case there is always a grim race between two processes - dispersal over large volumes of the atmosphere vs. fall-out on the earth's surface.

Past fall-outs with spectacular consequences were of a special kind. Thus, the very first atom-bomb test was conducted at ground level. Radioactive soil of the New Mexico desert rained down on herds of sheep, inflicting the now all too familiar atom burns. Here, as in the Mar. 1 test, explosion at ground level

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blew large particles into the upper air, with sedimentation occurring at distances of the order of 100 miles from the scene of the explosion. Normally, we would have small particles, with any fall-out accompanying rain or snowfall. Here, the safety factor we are relying on is the dispersal of the radioactive cloud by atmospheric convection, plus the slowness of atmospheric currents. Before the cloud can reach inhabited areas over thousands of miles of ocean, it will usually have become diluted with millions of cubic miles of air. This will be true in most cases. Unfortunately, the exceptional case presents too serious a situation to be taken lightly, even if it is to occur only once in a hundred times. And Nature loves an exception. In the past this rule has led to unpleasant surprises.

During World War II one of these surprises embarrassed meteorologists forecasting for bomber flights over the European continent. Navigators reported winds of over 100 miles per hour occurring in narrow streams not detected by the widely dispersed weather stations. When the meteorologists were finally (and very reluctantly) convinced that this phenomenon is real, they labelled it the "jet stream". We know now that it extends for thousands of miles, winding through the atmosphere in an erratic and unpredictable way. Winds between 100 and 200 mph prevail in this narrow current, at heights above 20,000 feet.

Consider the possibilities for evil should radioactivity be injected into this stream. Normally it takes a week for the effects of a bomb-test at the Eniwetok Proving Grounds to be detected in the U.S. At jet-stream speeds, this time might be reduced to a day. Short lived isotopes of exceptional virulence would still be active in the H - bomb cloud, with this activity not yet widely dispersed. Even the relatively mild carbon 14 could inflict radiation sickness and atom burns on millions of people in the U.S. or other lands adjoining the Pacific Ocean (see Appendix).

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It is known that the jet stream flow may assume a north-easterly direction. This poses the possibility that the radioactive cloud might reach Canada with the consequences indicated previously.

The end-product of the arms race is the cobalt bomb. Here the H - bomb is surrounded by a shell of cobalt 59, which becomes radioactive cobalt 60 by reaction with the emitted neutrons. Cobalt 60 has a half-life of 5 years; its radiation is a thousand-fold more intense than that of radium. A few such bombs exploded to windward of a major country like the U.S.A., would produce a deadly cloud moving across the nation, destroying all life. There is no conceivable defense, for the bombs may be exploded a thousand miles outside the target country's borders. Dispersal of the population would of course be useless. It is quite feasible to destroy all life on earth by using enough of these bombs (see, e.g., L. Szilard's estimate as reported in "Bulletin of the Atomic Scientists", Apr. 1950, p. 107ff, and above reference to Arnold).

Certain conclusions follow inevitably from these compelling physical considerations. The H-bomb tests are not the private affair of any one country merely trying out a new weapon for its arsenal. Firstly, the scientists conducting such tests cannot assure the safety of inhabitants of countries thousands of miles from the site of the test. Secondly, the increase in background radiation over the entire world that is invariably produced by H-bomb tests is the concern of the population of the entire world.

Finally, apart from the potential damage which could be inflicted by the tests themselves, they have much wider implications. For, in view of the capabilities of hydrogen and cobalt bombs, not victory for one side or the other, but destruction of world civilization is the inevitable outcome of an atomic war.

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Appendix.

We will assume a bomb about 1000 times the strength of that used at Hiroshima. The published data on the latter bomb enable us to estimate the energy output, and thus the neutron production.

Assuming lithium is involved, the neutron production must be of the order of 300 lb. for a single explosion. The products of reaction with nitrogen would be of the order of two tons of carbon 14.

If this forms a cloud having an extent of 100 by 100 miles and depth 2 miles, not unreasonable for the first 48 hours after an explosion, we may calculate the radiation level directly, for the case of uniform mixing. A simple way of doing this would be to compare the case calculated by Arnold (ibid) with ours. We find a level corresponding to 1 roentgen per week, three times the danger level. This analysis leaves out of account the possible presence of much stronger radioisotopes.

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1905 1955

Premier's Office

REGINA, April 19th, 1954.

Honourable L.B. Pearson,
Secretary of State for External Affairs,
OTTAWA, Ontario.

50219-D-40

Dear Mr. Pearson:

In the Premier's absence I wish to acknowledge with thanks receipt of your letter of April 14th and to advise you that it will be brought to his attention on his return to the office.

Yours sincerely,

Eleanor McKinnon

Secretary.

D-1
APR 22 1954

Saskatchewan Golden Jubilee Year

21-6-1955

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FILE

E. de Lotbinière/md

Copy referred to
P.M.'s office, Mr. Cross.

Ottawa, April 14, 1954.

50219-D-40
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Dear Mr. Douglas,

The Prime Minister has referred to me a copy of your letter dated April 7, together with a certified copy of the resolution passed by the Legislative Assembly of Saskatchewan at its recent session, concerning the threat of atomic warfare to our civilization.

I should like to assure you that the Government is aware of the momentous implications of the recent thermonuclear experiments conducted by the United States and the U.S.S.R., and is giving earnest and continuous attention to this grave problem. In this connection, I am taking the liberty of enclosing an extract of my remarks on this subject in the recent debate on external affairs in the House of Commons, as reported in Hansard for March 31.

Kindest regards.

Yours sincerely,

L.B.PEARSON

The Honourable T.C. Douglas, M.L.A.,
Premier of Saskatchewan,
Legislative Building,
REGINA, Saskatchewan.

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Ext. 182

OTTAWA FILE
No. 50219-D-40

Letter No. 140

Date April 9, 1954.

SECURITY CLASSIFICATION
UNCLASSIFIED

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FROM: THE HIGH COMMISSIONER FOR CANADA IN AUSTRALIA, CANBERRA

TO: THE UNDER-SECRETARY OF STATE FOR EXTERNAL AFFAIRS, CANADA

Reference.....

Subject: Australian reactions to Hydrogen Bomb tests.

14 APR 1954

The purpose of this letter is to transmit the text of a statement made in the House of Representatives this morning by Prime Minister Menzies on the Hydrogen bomb, together with a brief reference to the Leader of the Opposition's reply, and a summary of recent press comment on the H-Bomb developments.

2. Attached please find three copies of the text of the Prime Minister's statement to the House this morning. Mr. Menzies said:

(a) There was nothing to indicate that any of the H-Bomb tests had got out of control or that future tests might result in "ourselves becoming the victims of our own developments";

(b) Until effective international control and inspection of atomic weapons was achieved, it would be folly for the free world to discontinue testing of atomic weapons;

(c) Australia would not put pressure upon the United States to desist from further tests of the H-Bomb;

(d) "I reject the possibility that ... these weapons will be put to their final use in war ... and the human race sent back to the darkest of the dark ages ... I still believe that the greatest weapon in the armoury of the world is the spirit of man. As men we do many mad things; but there are some things that men and nations will not do except in a moment of unprecedented insanity";

(e) He preferred a second possibility, which was that widespread knowledge of the destructive capacity of the new weapons and the knowledge in the Soviet Union of the superiority which the free world now possessed in this field would bring the Communist countries to accept a genuine and effective system of control;

(f) "It is a grievous error to think that the United States has adopted a posture of war. In common with the British people throughout the world, the Americans desire peace."

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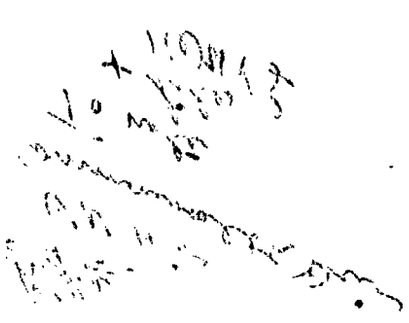

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"... But before we can garner the human fruits of remarkable scientific developments we must bend our energies to getting rid of a state of affairs in which we think, and are compelled to think, in terms of destructive power."

3. The text of the reply of Dr. Evatt, Leader of the Opposition is not yet available but in brief he said there was urgent need for international control of atomic weapons with effective inspection. He welcomed the pending convening of the Disarmament Commission and argued that if any fruitful consequences developed from meetings of the Commission or its sub-committee, the United Nations General Assembly should be called immediately to deal with control of atomic weapons.

Press Reaction.

4. Press reaction to the H-Bomb tests in the Marshall Islands has been criss-crossed with references to U. S. Secretary of State Dulles' "massive retaliation" statement and more recently to the Indo-China crisis. Recent comment on the Indo-China situation was summarized in my letter No. 129 of today's date. The following summary deals mainly with reaction to the general situation created by the H-Bomb tests.

5. The Melbourne Age of March 22 said:

"Experiments with bigger and more destructive bombs, and their aftermath, tend to create a series of problems having deep moral, ethical and sociological aspects. These may not weigh heavily in Moscow if some herdsmen of Irkutsk pay the penalty in comparable tests, and an area of tundra is blasted. But the good-neighbour policy enjoins obligations of an enlightened kind, even when the armory intended to serve the cause of freedom is being made more and more terrifying.

"...modern war with these weapons would be the ultimate of suicidal lunacy ... There is clearly desparate need to establish some firm international control of atomic energy and its variants.

6. The Melbourne Herald of March 22 said:

"It may be that the use of such weapons in any future world war becomes improbable if both sides have the same monstrous power of destruction. But probability is not a good enough margin when the stake is the survival of humanity. War itself must be abolished."

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7. The West Australian of March 25 said:

> "There are bound to be misgivings ~~but~~ in the Western world lest United States retaliatory action in the face of some future case of aggression should launch an atomic war without prior consultation with America's allies".

8. The Sydney Morning Herald of March 26 said:

> "Set against the appalling background of the hydrogen bomb, the need for the closest co-operation between America and her allies becomes doubly apparent, and the doubts expressed by Mr. Lester Pearson about Mr. Dulles' policy of "massive retaliation" must be widely shared. ...
>
> "... to retaliate with atomic weapons against aggression today would be to launch the world on a full-scale atomic war. No nation, however, powerful, however well-intentioned, can be conceded the right to make such a tremendous decision alone ...
>
> " ...there have been various hints that the Secretary of State did not really mean what he said, that the "new look" is a misnomer, that America has every intention of preserving in all circumstances the closest consultation with her allies. But the "problems and perils" involved are indeed so stupendous that America's friends are entitled to seek specific and positive assurances that the doctrine of atomic retaliation will not be invoked without their full agreement."

9. The Melbourne Age of March 29 said:

> "This month's revelations powerfully reinforce President Eisenhower's proposal for ensuring the peaceful use of atomic energy through/ international control agency. ...
>
> " ...The appalling scale of the latest H-Bomb devastation may act as a spur to negotiations, with a view to reaching the position at which these weapons would be firmly renounced and even become physically out of the question for military purposes.
>
> " ... The hope is that from anxious dread and revulsion will come a top-level determination to free mankind from the nightmare."

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10. The Melbourne Argus of March 30 said:

> "If it is true that the Americans have decided to go ahead and explode another and still more powerful H-Bomb in the Pacific next month, then the Australian Government has a very clear duty.
>
> "That is to assure itself that the projected explosion cannot possibly affect Australia or its territories - and to tell the people that they have no cause for fear. ...
>
> "All we know is that the last H-Bomb surprised the American scientists who caused it and affected both Japanese lives and Japan's food supply. ...
>
> "Since we are living in the Pacific too, it is our Government's duty to assure itself and us that such errors will not be repeated."

11. The Sydney Morning Herald on April 7 said:

> "... The free world dares not allow the hydrogen bomb to become the monopoly of a Power which has shown itself aggressive in policy and without scruple in method. ...
>
> "...But it may reasonably be hoped, as Sir Winston Churchill and President Eisenhower hope, that if both sides in the "cold war" possess such weapons - weapons that is to say, of total annihilation - then the possibility of a global war in which they could be used will recede. For plainly war on such terms can serve no policy ends, can have no victor, and can, in short, be regarded as no more than mutual racial suicide. The men in the Kremlin are hard-headed realists; they will have no difficulty in understanding such an argument.
>
> " Yet Western policy cannot rest there. However discouraging past experience, it must address itself once again to the broader problem of halting the deadly atomic armament race. Until that is solved, mankind lives on the edge of a precipice, and not the most eloquent and reasoned appeals will still the voices of fear.

W. A. Downes

High Commissioner.

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FILE 89

STATEMENT IN THE HOUSE OF REPRESENTATIVES

BY THE PRIME MINISTER.

9th April, 1954.

H Y D R O G E N B O M B.

On Tuesday I informed Honourable Members that I would, at an early date, make a statement on the question of the hydrogen bomb. It is difficult to say anything new on a subject so much debated, but I do think that I should, on behalf of the Government, endeavour to put the questions which arise into some form of order.

On the terrible nature of the hydrogen bomb there cannot be two opinions. War is no novelty to mankind. But the most terrible thing in our own time has been the conversion of the armed conflict of soldier with soldier into total war, which has become so rapidly an instrument for the indiscriminate mass annhilation of mankind. We differ about many things in this House, but we have no differences in our desire to outlaw war and substitute a sensible arbitration among the nations of the world. Nobody in Australia has any doubt that if we could eliminate war as successfully as we have eliminated civil disturbances at home, the financial resources, the materials, the energies realized by this happy deliverance, would bring immeasurable benefits to our people.

But war has not been eliminated. True, we have the United Nations. We have immense free democracies with no aggressive designs. We have, as I believe, an increasingly vocal world opinion in favour of peace. Yet the history of the last few years, which we had looked forward to as a period of peace won by the sacrifices of the second world war, has shown that there will be no peace in the world until either all the nations of the world have shown that they desire it, or the nations which desire peace are, in practical terms able to show that aggression by other nations is doomed to defeat. The collective action envisaged in the charter of the United Nations does not confine itself to resolutions of good-will. It contemplates that under some circumstances there may be the grim necessity of resorting to collective arms. Those observations, in a highly summarised way, explain Korea.

But just before the end of the recent war the atomic bomb was created. Its unprecedented capacity for mass destruction exhibited in two Japanese cities brought the war to an end. Men and women the world over were torn between two emotions; one an inevitable feeling of abhorrence at the wiping out of human lives on so terrible a scale; the other an emotion of thankfulness that in the long run more losses of human life and more human misery had been averted.

Not long afterwards the problem of the future control of this new and terrible instrument of destruction became a matter of world concern. There was an almost unanimous opinion in the free world that the powers of nature so released should not be employed for the destruction of man, but for his aid and enrichment. I speak about no Party matter. Dr. Evatt himself became the first Chairman of the Atomic Energy Commission created under the United Nations. On a previous occasion he has, speaking with the authority of first-hand knowledge, reminded this House of the events which ensued.

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We had on 15th October, 1953, on a motion by the Honourable Member for Mackellar, been discussing the control of atomic energy. It was in the minds of all Honourable Members that the United States itself, possessed as it was at that time of dominating superiority in the atomic field, and knowing as it did, and as we must not forget, that the communist powers had an immense superiority in armed forces and what are grimly called "conventional weapons", had taken the lead in promoting civilised action.

With his permission I will quote what Dr. Evatt said in the Debate.

"From the outset, the proposal of the United States of America, through the former President, Mr. Truman, was not only beyond reproach of criticism, but was one of the most generous gestures in the history of mankind. The United States of America had the monopoly of the atomic bomb, and was prepared to give it up, provided sure and certain safeguards were introduced against any nation breaking the treaty and manufacturing and using atomic bombs when America was disarmed. That was an extraordinarily constructive and generous attitude for the United States of America to adopt. It has maintained that attitude ever since. The attitude of Russia, which rejected the proposal of the United States of America, was completely intransient, and was due to folly, obstinacy or worse."

I adopted and adopt that statement. The sad truth is that, when this matter came before the United Nations, the Soviet Union, while agreeing that there should be international control, asserted that it should be set up under the Security Council to carry out periodical inspection, violations to be dealt with by the Security Council and by nobody else. In short the Soviet Union proposed that the control authority should be set up under a body on which it had a power of veto and which it could convert at its own will into a futility. Under that proposal no violation by the Soviet Union could be touched. The idea of an international control which is effective only one way was, and is, intolerable to the free world. I said that this was no Party matter. The best proof of this is that successive Australian Governments, including my own, have consistently pressed for action in the United Nations. But whilst there has so far been no sign of any change of mind or of heart on the part of the Communists, this does not mean that we give way to despair; it does mean that much work remains to be done in the international field before genuine control of these matters and effective (and inspected) prohibition of these weapons becomes part of the normal pattern of life.

I remind the House of these matters because they provide a background against which the problem of the new and terrible hydrogen bomb is to be considered. They remind us that the problem is not altered by the substitution of the hydrogen bomb for the earlier atom bomb; it has merely been intensified in degree and in urgency.

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It is perhaps one of the horrible advantages of the totalitarian state that it can, as the Soviet Union has done devise and test hydrogen bombs in comparative secrecy. But the testing of hydrogen bombs by the great free democracy of the United States isinstantaneously world news and a matter of world concern.

Should these differences induce us to adopt hasty or even hysterical conclusions? Certainly not. It would indeed be odd if United States' experiments with hydrogen bombs encouraged any thinking people to direct their propaganda to the United States and not to our potential enemies. It is a common slogan in our own country, coming from a source which we all well understand, that we should "ban the atom bomb". This propaganda should not be directed to those who have honourably and persistently offered to ban it; it should more properly be directed to those who, as I have shown, have offered lip service to the ban but have throughout frustrated its effectiveness. The free world has maintained its freedom by valour and fortitude and calm thinking, and it will continue to do so.

Is there any reason to believe that these hydrogen bomb tests are having such unexpected results - results not guarded against by any fore-thought that we may ourselves become the victimss of our own scientific development? The answer to that is that there is no evidence whatever that any bomb exploded in any such test has got out of control or has given the lie to the preliminary calculations of the experts.

Under these circumstances I venture to make two observations, which would I think represent the general sense of our people. The first is that until we have secured some effective international system of control and inspection it would be folly for the free world to cease in its labours, and to concede the field of destruction to others. If the world is to have these hideous weapons, then we simply cannot afford to be inferior to those who have produced the whole pattern of aggression for the last 6 or 7 years. The inevitable conclusion from that statement is that we should be indeed thankful that our great friends and allies of the United States have been willing to accept the vast burdens of money and of skill and of energy involved in maintaining a clear world leadership. It follows that Australia will not put pressure upon the United States to desist, any more than would any of the other nations with whom Australia is honouable and vitally associated.

A brief analysis of these events and considerations will show that mankind in truth (and in the word "mankind" I include the men and women of the Soviet Union who as individuals have the same emotions and ambitions and natural fears as ourselves) must contemplate three possibilities. One, which I reject, is that in due or undue course these weapons will be put to their final use in war, and that the greatest mutual holacaust in the history of the world will occur; all the belligerent nations grievously weakened and crippled and the human race sent back to the darkest of the dark ages. If I reject this answer it is because I still believe that the greatest weapon in the armoury of the world is the spirit of man, made in the image of his Creator. As men we do many mad things; but there are some things that men and nations will not do except in a moment of unprecedented insanity.

The second possibility, which is in a real sense involved in the first, is that the wide-spread knowledge of the immense and indiscriminate destructive capacity of these new weapons, and the knowledge in the Soviet Union of the superiority which the free world now possesses in this dreadful field,

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will do what the debates in the United Nations have not done and bring the communist countries to accept a genuine and effective system of control and a genuine and effective collaboration with all other nations for the establishment and preservation of the peace. Viewed in this way the recent American experiments have been a great contribution to the psychology of peace. The broad possibility is that all over the world we may be shortly brought to realize that the exploring of the hitherto unknown forces of nature is not an occasion for condemning the scientists, but for praising them. It is the proud duty of the man of science to explore the unknown. What is done with the fruits of his exploration is not merely a matter for him; it is essentially a matter for the governments and peoples of the world. In the United States, in the United Kingdom, here in Australia and elsewhere, men are increasingly turning their attention to using these vast discoveries for the benefit of mankind. It is a grievous error to think that the United States has adopted a posture of war. In common with the British people all over the world, the Americans desire peace. President Eisenhower himself has exhibited a generous willingness to share the knowledge of the United States with others in the civil use of atomic science. Only at the end of last year the President made a magnificent offer to set up an international pool to which the United States would contribute from its stocks of material and magnificent technical knowledge so that atomic energy could be harnessed peacefully for the benefit of the people of all nations. He has more recently recommended to Congress an amendment of the legislation of the United States to permit the exchange of a wider range of information than ever before.

But before we can garner the human fruits of remarkable scientific developments we must bend our energies to getting rid of a state of affairs in which we think, and are compelled to think, in terms of destructive power. My colleague the Minister for External Affairs, speaking on behalf of the Government, recently urged that the Disarmament Commission should be convened so that the facts may be faced internationally and a supreme effort made for sanity and civilization. Similar views have been expressed by the United Kingdom, the United States and France. Whatever the appropriate instrumentality of the United Nations may be, I am sure that I express the deep wishes not only of this House but of every Australian in saying that I hope that, with the realistic knowledge that is now sweeping around the world, there may be achieved so effective a control of atomic weapons and of atomic development for war, that the almost illimitable energy of the atom may, in our own time, come to be used for the peace and well being of all men.

.....

Prime Minister's Press Secretary,
Canberra.

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File WP B

IN REPLY PLEASE QUOTE
NO. CSC 6-1

CANADA

Department of National Defence

CHIEFS OF STAFF COMMITTEE

TOP SECRET
CANADIAN EYES ONLY

ADDRESS REPLY TO
SECRETARY
CHIEFS OF STAFF COMMITTEE,
OTTAWA.

Copy circulated to these officers. { Mr. MacKay, Mr. Wershof, Mr. Rogers, Mr. Green } WPB

9 April, 1954.

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Chairman, Chiefs of Staff
C.G.S.
C.N.S.
C.A.S.
C.D.R.B.

Report by Chairman, Defence Research Board on Washington Conference on the Effects of Atomic Weapons

1. Attached for your information is a copy of a report by the Chairman, Defence Research Board on the Washington Conference on the effects of atomic explosions on human beings and their environment which was held 15-19 February, 1954. This report has been considered by the Joint Special Weapons Policy Committee and its comments are attached.

(A.O. Solomon)
Commander (SB), RCN,
Secretary.

AOS/3729/sjp
Encs.

cc: Deputy Minister
Secretary to the Cabinet
Acting Under-Secretary of State for External Affairs
Co-ordinator, Joint Staff.

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CANADA

IN REPLY PLEASE QUOTE
No. CSC ~~1288.1~~ (JSWPC)
6-1

Department of National Defence

SECRET —

CANADIAN EYES ONLY (authority CSC 6-1 of 24 Mar 55)

JOINT STAFF

ADDRESS REPLY TO
CHAIRMAN
CHIEFS OF STAFF,
OTTAWA.

7 April 1954

Secretary,
Chief of Staff Committee.

Report By CDRB on Washington Conference on the Effects of Atomic Weapons

The Joint Special Weapons Policy Committee has considered the subject report and has agreed that the Chiefs of Staff should be advised as follows:

a) The JSWPC concurs in the recommendations contained in the report and has incorporated them in its operating procedure. A list of specially cleared personnel is being prepared, and a distinctive security category will be assigned to documents containing special atomic information. It is intended that requests for special information will be centralized by the Secretary, JSWPC.

b) The technical information contained in Appendix "A" to the report will be disseminated.

c) An attempt is being made to obtain a copy of the film of the fusion bomb test which was shown at the conference.

N D Bray

(N. D. Bray)
Wing Commander, RCAF,
Secretary,
Joint Special Weapons Policy Committee.

NDB/5976/mb

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CANADIAN EYES ONLY.

DEPARTMENT OF NATIONAL DEFENCE
CANADA

DEFENCE RESEARCH BOARD

S E C R E T
CANADIAN EYES ONLY

DRBS 190-205-46-2 (SW(A))

Ottawa, Ontario
10 March, 1954.

Chairman, Chiefs of Staff

Conference on the Effects of Atomic Explosions
on Human Beings and their Environment, 15-19 February, 1954

1. The Chiefs of Staff Committee at their special Meeting on 25 January, 1954, considered the attendance at the m/n Conference, and directed that Chairman, Defence Research Board, should lead a Canadian Service delegation to attend this Conference with the representatives from the US and the UK.

2. The following delegation represented Canada:

Dr. O.M. Solandt, Chairman, Defence Research Board

Col. J.E. Andrew - Interservice Medical Committee
Dr. J.A. Carruthers, D.R.B.
Dr. A.J. Cipriani - Atomic Energy of Canada Ltd.
A/C J.A. Easton, C.Arm. - RCAF
Lt. Cdr. J.P. Keeling, Staff Officer (ABCD), DTSD - RCN
Lt. Col. R.A. Klaehn, DWD3 - Canadian Army
Mr. A.K. Longair, S.S.O. (Atomic), D.R.B.
Dr. E.E. Massey, S.S.O. (Civil Defence), D.R.B.
Lt. Col. F.C. Pace - Commandant, ABC Wing, RCAMC School
Col. G.H. Spencer, DWD - Canadian Army
Dr. R.M. Taylor - Atomic Energy of Canada Ltd.

3. Meetings were held in Washington, D.C., as follows:

(a) 15, 16, 19 February 54, under the auspices of the US Department of Defense in the Pentagon;

(b) 17, 18 February 54, under the auspices of the US Atomic Energy Commission at their Headquarters.

4. The Chairman, Defence Research Board, at the 557th Meeting of the Chiefs of Staff Committee, reported briefly and stated a more complete written report of the conference would be forwarded to the Chiefs of Staff.

5. There was every evidence that both the UK and the US were anxious to cooperate and to make available as much information as possible in the field under discussion. The Conference was extremely valuable in affording the opportunity for the Canadian delegation to meet officials of the US and UK who are concerned with this work.

6. The Conference consisted largely of the presentation of research results. Some of these related to model scale experiments, but most to actual tests of atomic weapons. The US results were expressed in terms of an explosion equivalent to 1 Kiloton of TNT. "Scaling laws" were given, which will enable blast, thermal and initial gamma radiation effects to be calculated for explosions of weapons of greater power at different heights and in varying atmospheric conditions. The ranges over which these various scaling laws apply were given. There was every evidence that this was the most up-to-date information, and differed in greater or lesser degree from the information in "Capabilities of Atomic Weapons".

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7. It became evident that the limited information available in the past to the Services and Civil Defence authorities in Canada had given a picture which, so far as it went, was not seriously wrong. What has now been made available -- and what was lacking before -- is specific information which will enable the Services and Defence Research Board to forecast, with a great deal more confidence, the effect on specific military situations of the use of atomic weapons.

8. It will take months to assimilate and interpret the information provided by USA and UK and to incorporate it in the answers to specific Service problems. In the meantime, however, a study of this information by technical officers in the Services working in cooperation with Scientific Officers of the Defence Research Board ought to show general lines of approach to the question of how the use of atomic weapons, and the need for defence against them, will affect military operations.

9. The Conference consisted of a series of presentations followed by discussion periods. Precis of the lectures were furnished but could not be brought away by delegates; nor could personal notes made be taken away. Both precis and notes will be forwarded through the established channels.

10. Some very brief notes on specific fields are attached at Appendix "A".

11. A meeting of the Canadian delegation was called by CDRB on Friday, 26 February, 1954, to consider what action should be taken as a result of the conference in Washington. The following attended:

Dr. O.M. Solandt, Chairman, Defence Research Board

Col. J.E. Andrew - Interservice Medical Committee
Col. G.M. Carrie, CD(C), DRB
Dr. A.J. Cipriani - Atomic Energy of Canada Ltd.
Mr. E. Ll. Davies, VCDRB
A/C J.A. Easton, C. Arm. - RCAF
Lt. Cdr. J.P. Keeling, Staff Officer (ABCD), DTSD - RCN
Lt. Col. R.A. Klaehn, DWD3 - Canadian Army
Mr. A.K. Longair, SSO(Atomic) DRB
Dr. E.E. Massey, SSO(Civ Def) DRB
Lt. Col. F.C. Pace - ABC Wing, RCAMC School
Col. G.H. Spencer, DWD - Canadian Army

12. The following points were discussed:

(a) Security of Information

Dr. Solandt, leader of the Canadian delegation, reminded the meeting that, at the request of the US officials, he had given an oral assurance that information given at the meetings and classified as "restricted data" would be shown only to people suitably cleared. Dr. Solandt, in reporting that he had given the necessary assurance, said that in the case of some of the papers at least, this requirement might change if an amendment to the McMahon Act, now proposed, becomes law.

Recommendation

It was agreed to recommend to the Chiefs of Staff Committee that:

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(i) all documents received from the USA or the UK at the conference or subsequently which were classified by the US as "restricted data" or by the British as "TOP SECRET or SECRET LIMITED" should be handled specially, that they should be seen only by personnel cleared to TOP SECRET after a field investigation and that for each document a record should be kept of who had seen it.

(ii) in order to implement (i), each Service and DRB prepare a list by name and appointment of each officer who should in the course of his work have access to all or portions of this information on a need-to-know basis.

(b) Control of Information

The meeting discussed requests for, receipt of, and circulation of reports on atomic matters. In the case of unclassified information, or classified information of a type now received on a routine basis, mechanisms (e.g. through D.S.I.S.) exist for making information received by a particular Service or DRB available to other Services or DRB. These mechanisms should be examined to see that they are working effectively. There remained information furnished to us under special arrangements, including the extension of the Technical Co-operation Programme under which the recent meeting was held. Such information might bear either a military classification or a "restricted data" classification or the British equivalent. If it bore a military classification only, the circulation should be determined by normal Service procedures. If "restricted data" or British "TOP SECRET or SECRET LIMITED", special mechanism should be set up for the circulation of this information. Such mechanism might well be determined by the new Joint Special Weapons Policy Committee, and the handling of such information in the Services would be simplified by a directive from that Committee.

Recommendation

It was agreed to recommend to the Chiefs of Staff Committee that:

(i) the circulation of information containing "restricted data" or the British equivalent classification should be made under proper conditions of security.

As regards requests for reports, it would be very desirable, to avoid duplication, to have a central record of requests made to the USA and the UK. In the case of requests to USA which might involve "restricted data", it was necessary that these should be made through a single office in the Department of National Defence, Ottawa, to the Canadian Joint Staff in Washington for presentation to the US Atomic Energy Commission and Department of Defense.

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Recommendation

It was agreed to recommend to the Chiefs of Staff Committee that:

(ii) requests for information on atomic matters, whether "restricted data", military classification, or unclassified, made to US or UK by Navy, Army, Air Force or DRB should be recorded centrally. (This does not mean that the requests must go through the central agency, except in the case of "restricted data" - it might well go Service-to-Service - but ensures that, before making a request for information, a check is made to see whether it has not already been received by another Service, and thus avoid duplication and embarrassment to the US or the UK.)

It would also be desirable to record centrally the receipt by the Services and DRB of documents furnished by US or UK dealing with atomic matters, whether these documents involved "restricted data" or the British "TOP SECRET or SECRET LIMITED" or were military documents with military classifications received through normal Service-to-Service channels.

Recommendation

It was agreed to recommend to the Chiefs of Staff Committee that:

(iii) the receipt from the US or the UK by the Navy, Army, Air Force or DRB of all information on atomic matters, whether "restricted data", or ordinary military classification should be recorded centrally, and that so far as unclassified information is concerned, the existing mechanisms for making it freely available within the Services and DRB should be examined.

(c) Dissemination of Information

The method of dissemination of information received in Canada was discussed, with particular immediate reference to the list of UK reports, copy attached at Appendix "B". It was noted that these reports and presumably many future reports from both the UK and the US, vary in their content from information on research techniques to effects on structures and military equipment. The opinion was expressed that in view of the contents of these reports and the necessity for security control, it would not be advisable to duplicate these reports in quantity and circulate them to all those cleared. It was, therefore, suggested that a comprehensive precis of each of the documents should be made and circulated to those officers who might be concerned in the Navy, Army, Air Force and DRB in the same way as is now done for all documents received by

Document disclosed under the *Access to Information Act*
Document divulgué en vertu de la *Loi sur l'accès à l'information*

the Defence Research Board, under strict security regulations and conditions. The individual officers interested in the information in a particular report in connection with their own work would then request the complete document. It was suggested that this method of handling documents and reports might be later extended to all reports on atomic matters in order to make sure of proper control and at the same time to make sure that officers officially concerned are aware of all documents in their field whether the document has been received by his own service or not.

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SECRET
CANADIAN EYES ONLY

APPENDIX "A"

TECHNICAL POINTS OF INTEREST ARISING DURING THE CONFERENCE

1. Blast

(a) The blast wave at ground level does not conform to the simple picture given in "Effects of Atomic Weapons". Phenomena associated with the very early stages of the explosion modify the blast effects in certain circumstances.

(b) There appears to be a loss of energy if a weapon is exploded at a height of 200-300 feet above ground.

(c) The effect of rain appears to be unimportant except for bombs of very great power.

(d) Figures were given from which the "volume of kill" can be calculated for atomic weapons used in the anti-aircraft role.

(e) The atomic weapon, when used as an underground mine, is not so effective as had been expected; and it seems likely that, except for very specific targets, this mode of explosion would not be used.

(f) The design of shelters will have to be very carefully considered, since some apparently simple and therefore economical shapes lead to an unexpected build up of pressure and heat.

2. Nuclear Radiation

(a) Considering the radiation dose from external radiation only, the British Test at Montebello showed that, for an explosion on the surface of water or at a small depth below the surface, there is quite a large "zone of no escape" where the lethal dose of radiation will be delivered so quickly that no one can escape from it.

(b) For certain weapons, and in certain circumstances, neutrons will contribute substantially to the radiation dose.

(c) At the same time, U.S.A. places hazard from "induced radioactivity" very low, although it can occur in special circumstances.

(d) The hazard from beta radiation still has to be evaluated.

(e) Piloted jet aircraft flew through the thickest part of fission product cloud nine minutes after one of the British test explosions. The total dose received by any crew member was 10 roentgens, which must be regarded as very small in the circumstances.

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3. Thermal Radiation

(a) As had been expected, thermal effects take place in a much shorter time than indicated by the "Effects of Atomic Weapons" or the "Capabilities of Atomic Weapons".

(b) The probable response of human skin to the thermal radiation seems now to be well understood, but much work remains to be done on materials. However, the protective value of clothing appears to be better than had been anticipated.

(c) The effect of the flash on the eyes has not yet been evaluated. It does not appear to be of great importance in daylight, but may be much more important for dark-adapted eyes.

4. Target Response

The papers from the conference, when available, will show that British results on target response are largely unevaluated, since they were mostly obtained at the tests in October 1953. U.S.A., on the other hand, has found that it can divide military equipment into fairly broad groups, and has made graphs available from which the response can be related to bomb yield and to distance from the explosion. Mention should perhaps be made of the fact that trenches appear to afford good protection against both thermal and nuclear radiation, but that unless revetted are liable to collapse. Aircraft built for near-sonic speeds resist blast perhaps better than expected. Model experiments on deep under water explosions would seem to indicate that a nominal (20 KT) weapon exploded at a depth of 2,000 ft. might "kill" a submarine at a depth of 200 feet up to 8,000 feet range. The use of atomic weapons as "super depth charges" still has to be evaluated, however.

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SECRET

TRIPARTITE CONFERENCE ON THE EFFECTS OF ATOMIC EXPLOSIONS ON HUMAN BEINGS AND THEIR ENVIRONMENT

One copy of each the following reports was provided to the Canadian Delegation by the U.K. delegation. U.K. will be asked for more copies, or for permission to reproduce these. (The comments in parentheses are added by A.K. Longair)

1.	Abstracts of some British reports (all theoretical or experiments on models)	SECRET
2.	Air Blast - Experimental Results (including Montebello and Totem I and II)	CONFIDENTIAL with SECRET graphs
3.	Micro-scale techniques (for blast)	CONFIDENTIAL
4.	Experimental Studies of the Entry of Blast into Tunnels	SECRET
5.	Model Experiments on the Entry of Blast into Shelters (Surface Shelters)	SECRET
6.	Ground Shock (one paragraph gives Montebello results)	CONFIDENTIAL
7.	Shallow Water Explosions (about one third of this paper relates to the Montebello test; the rest to model scale experiments)	SECRET
8.	Damage to submerged submarines by a deep underwater atomic explosion (of necessity, theoretical)	SECRET
9.	Memorandum from Naval Construction Department and the Naval Construction Research Establishment on Passive Protection of ships from Atomic attack (includes results of equipment exposed at Montebello and Totem I and II)	SECRET
10.	The Effects of Atomic Weapons on Structures and Military Equipment (mainly high explosive work, but includes results on army and air force structures and equipment exposed at Montebello and Totem I and II)	SECRET
11.	Thermal Radiation (data from Montebello and Totem I and II)	SECRET
12.	Statement by the U.K. Delegation on Target Response to Thermal Radiation (gives results on materials and equipment exposed at Montebello and Totem I and II; also model scale experiments)	SECRET
13.	Radioactive Contamination (the first part of this paper, the part on contamination, is TOP SECRET, and is the most sensitive information provided by U.K.; there are SECRET sections on decay relationships, beta-gamma ratios and decontamination)	TOP SECRET

Document disclosed under the *Access to Information Act*
Document divulgué en vertu de la *Loi sur l'accès à l'informatio*

14.	Statement by U.K. Delegation on Cloud Physics (results from Montebello and Totem I and II)	SECRET
15.	Gamma Radiation (Trial results; variation with distance, angular distribution, shielding in slit trenches, concrete structures. Extrapolation of model results to ships)	SECRET

A.K. Longair

(A.K. Longair)
for Chairman, Defence Research Board.

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Referred by direction of The Prime Minister

To The ~~Minister of~~ Secretary of State for External Affairs.

FOR INFORMATION AND ANY NECESSARY ACTION

Also referred to: Minister of Public Works; Minister of Agriculture, Minister of Citizenship & Immigration; Minister of National Health & Welfare; Minister of Justice; Minister of Transport; Minister of Trade and Commerce and Minister of Finance.

Ottawa April 13th, 1954. D. C. Thomson

~~XXXXXX~~ Secretary.

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File
ed J

Ottawa, April 9, 1954.

Honourable T. C. Douglas, M.L.A.,
Premier of Saskatchewan,
Legislative Building,
Regina, Saskatchewan.

50219-D-40
6 | ✓

My dear Premier:

I wish to acknowledge the receipt of your letter of April 7 with which you enclosed two sets of resolutions passed by the Legislative Assembly of Saskatchewan during the recent session.

I am having the resolutions brought to the attention of my colleagues.

Yours sincerely,

"Louis S. St-Laurent"

15.4.33(05)
14-4-13(55)

000300

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Document divulgué en vertu de la *Loi sur l'accès à l'information*

C O P Y

File etc.

PREMIER'S OFFICE

REGINA, April 7th, 1954.

FILE COPY

The Rt. Hon. L. S. St-Laurent, Q.C.,
Prime Minister of Canada,
OTTAWA, Ontario.

My dear Prime Minister:

I am enclosing herewith certified copies of resolutions which were passed by the Legislative Assembly of Saskatchewan during the recent Session held from February 11th to April 2nd, 1954.

Two sets of resolutions are going forward to you in order that you may have one set for your files and a second set for transmission to the appropriate Minister of your Government most concerned with the subject matter of these resolutions.

Yours sincerely,

(Sgd.) T. C. Douglas

T. C. Douglas.

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LEGISLATURE OF SASKATCHEWAN

SECOND SESSION - TWELFTH LEGISLATURE

Certified copy of a Resolution, passed unanimously by the Legislative Assembly of the Province of Saskatchewan, on March 30, 1954:

That this Assembly go on record as deploring the race in development of weapons of war of increasing powers of devastation and of potentialities which threaten catastrophe to the human race together with disintegration not only of civilization but of large sections of the physical world;

And further that this Assembly earnestly request the Government of Canada to intensify its efforts toward agreement amongst the Great Powers and member nations of the United Nations for the abandonment of production of nuclear weapons, the outlawry of their use as implements of war or as instruments of aggression, and for the diversion of the great forces of atomic and hydrogen energy to peaceful purposes and to the promotion of a better life for all mankind.

CERTIFIED A TRUE COPY

Georges Stephen

Clerk of the Legislative Assembly
of Saskatchewan.

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File 50219-D-40, pt.
THT

UNITED NATIONS

DISARMAMENT COMMISSION

Distr.
GENERAL

DC/44
8 April 1954

ORIGINAL: ENGLISH

LETTER DATED 8 APRIL 1954 FROM THE REPRESENTATIVE OF INDIA TO THE SECRETARY-GENERAL ENCLOSING EXTRACTS FROM STATEMENT MADE BY THE PRIME MINISTER OF INDIA IN THE HOUSE OF THE PEOPLE ON 2 APRIL 1954 ON THE SUBJECT OF THE HYDROGEN BOMB

50219-D-40
111

Sir,

1. I am directed by the Government of India to request you to place before the Disarmament Commission and its special sub-committee the views of the Government of India on the hydrogen bomb contained in a statement in Parliament on the 2nd April 1954 by the Prime Minister of India.

2. This statement, a copy of which is enclosed for your information and that of the Commission, sets out the approach and the concern of the Government of India in respect of the problem, and makes certain proposals. The Government of India requests that these proposals may be examined by the Commission. They believe that these proposals are practical and capable of application and without prejudice to any of the issues in regard to control, inspection, prohibition, stockpiling etc., which the Commission is seeking to resolve.

3. The Government of India further submits with confidence that the widespread concern the world over and the various suggestions made, should presently receive active study and consideration by the Commission.

4. The people and Government of India are disturbed and moved by the after-effects of the hydrogen bomb explosions on the people of Japan, which they submit, deserve special consideration of the Commission. Japan is not represented at the United Nations and it is not one of the parties principally concerned in this problem.

5. The Government of India also consider informed world opinion as to known and unknown but probable effects and particular implications of the explosion of these weapons of mass destruction are an important and perhaps a decisive factor in the solution of the problem to which the Commission is addressing itself.

000303

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6. The Government of India makes these proposals and requests their immediate consideration by the Disarmament Commission in the sincere belief and the earnest hope that they will make a useful beginning in the fulfilment of the earnest desire which the General Assembly affirmed last year in its Resolution No. 715(VIII) Clause I.

7. The Government of India are fully aware that any effective consideration and solution of this problem can be reached only by the Powers principally concerned, and by agreement among them. In the crisis that humanity faces and where the issue is the future of mankind, they have ventured in all humility to make this contribution to the collective thinking and action in which those in whom responsibility has been vested by the United Nations are presently engaged.

8. I request that this communication and its annexure may be circulated to the members of the Disarmament Commission as a United Nations document.

Please accept, Excellency, . . . etc.

(Rajeshwar Dayal)
Permanent Representative of India to the
United Nations.

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EXTRACTS FROM STATEMENT MADE BY THE PRIME MINISTER OF INDIA IN THE HOUSE OF THE PEOPLE ON 2 APRIL 1954 ON THE SUBJECT OF THE HYDROGEN BOMB

"The United States of America and the Union of Soviet Socialist Republics we are told possess this weapon and each of these countries has during the last two years effected test explosions, unleashing impacts which in every respect were far beyond those of any weapons of destruction known to man.

"A further and more powerful explosion than the one of 1st of March has been effected by the United States and more are reported to have been scheduled to take place.

"We know little more about the hydrogen bomb and its disastrous and horrible consequences than have appeared in the press or are otherwise matters of general knowledge or speculation. But even what we do know, and the very fact that the full facts of the effects of these explosions do not appear to be known or are ascertainable with any certainty even by scientists, points to certain conclusions. A new weapon of unprecedented power, both in volume and intensity, with unascertained and probably unascertainable range of destructive potential in respect to time and space, that is, both as regards the duration and extent of the consequences, is being tested, unleashing its massive power for use as a weapon of war. We know that its use threatens the existence of man and civilization as we know it. We are told there is no effective protection against the hydrogen bomb and that millions of people may be exterminated by a single explosion and many more injured and perhaps still many more condemned to slow death or to live under the shadow of the fear of disease and death.

"These are horrible prospects and affect us nations and peoples everywhere, whether we are involved in wars or power blocs or not. From diverse sides and parts of the world have come pronouncements which point to the dread features and ominous prospects of the hydrogen bomb era."

The Prime Minister then referred, in this connexion, to statements made by Professor Albert Einstein, Dr. Greenhead of Cincinnati University, Professor Martin, Defence and Scientific Adviser to the Government of Australia, Mr. Lester Pearson, Canadian Minister for External Affairs, and Mr. Malenkov, Soviet Prime Minister.

Prime Minister Nehru said: "There can be little doubt about the deep and widespread concern in the world, particularly among peoples, about these weapons and their dreadful consequences. But concern is not enough. Fear and dread do not lead to constructive thought or effective courses of action. Panic is no remedy against disaster of any kind, present or potential.

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"Mankind has to awaken itself to reality and face the situation with determination and assert itself to avert calamity.

"The general position of this country in this matter has been repeatedly stated and placed beyond all doubt. It is up to us to pursue as best as we can the objective we seek.

"We have maintained that nuclear (including thermonuclear), chemical and biological (bacterial) knowledge and power should not be used to forge these weapons of mass destruction. We have advocated the prohibition of such weapons by common consent and immediately by agreement amongst those concerned, which latter is at present the only effective way to bring about their abandonment.

"The House will no doubt recall the successive attempts made by us at the United Nations to secure the adoption of this view and approach."

Mr. Nehru then read out amendments moved by Indian delegates to a resolution on disarmament at the last session of the United Nations General Assembly in 1953.

The Prime Minister continued: "The House is aware that this latter suggestion has lately engaged the attention of the powers principally concerned at Berlin and elsewhere and talks have taken place and, so far as we know, are continuing.

"Time, however, appears to challenge us. Destruction threatens to catch us up if not to overtake us on its march to its sinister goal. We must seek to arrest it and avert the dire end it threatens.

"The Government proposes to continue to give its closest and continuous consideration to such steps as it can take in appropriate places and contexts in pursuit of our approach and common objective.

"I have stated publicly as our view that these experiments, which may have served their one and only useful purpose, namely to expose the nature of the horror and the tragedy, even though only partly, should cease. I repeat that to be our considered position and it is our hope this view and the great concern it reflects and which is world-wide, will evoke adequate and timely responses.

"Pending progress towards some solution, full or partial, in respect of prohibition and elimination of these weapons of mass destruction, which the General Assembly has affirmed as its earnest desire, the Government would consider among the steps to be taken, now and forthwith, the following:

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(1) Some sort of what may be called 'standstill agreement' in respect, at least, of these actual explosions, even if arrangements about the discontinuance of production and stockpiling must await more substantial agreements among those principally concerned.

(2) Full publicity by those principally concerned in the production of these weapons and by the United Nations of the extent of destructive power and known effects of these weapons, and also adequate indication of the extent of unknown but probable effects. Informed world public opinion is in our view a most effective factor in bringing about the results we desire.

(3) Immediate (and continuing) private meetings of the sub-committee of the Disarmament Commission to consider the 'standstill' proposal which I have just mentioned, pending decisions on prohibitions and controls, etc., to which the Disarmament Commission is asked by the General Assembly to address itself.

(4) Active steps by the states and peoples of the world, who, though not directly concerned with the production of these weapons, are very much concerned with the possible use of them, and at present by these experiments and their effects. They would, I venture to hope, express their concern and add their voices and influence in as effective a manner as possible to arrest the progress of this destructive potential which menaces all alike.

"The Government of India will use its best efforts in pursuit of these objectives.

"I would conclude with an expression of sympathy which this House and this country feel towards the victims of the recent explosions, Japanese fishermen and others, and to the people of Japan to whom it has brought much dread and concern by way of direct effects and by fear of food contamination.

"The open ocean appears no longer open, except in that those who sail on it for fishing or other legitimate purposes take greater and unknown risks caused by these explosions. It is of great concern to us that Asia and her peoples appear to be always nearer these occurrences and experiments and their fearsome consequences, actual and potential.

"We do not yet know fully whether the continuing effects of these explosions are carried only by the media of air and water, or whether they subsist in other strata of nature, and know how long their effects persist or whether they set up some sort of chain reaction, at which some have already hinted.

"We must endeavour with faith and hope to promote all efforts that seek to bring to a halt this drift to what appears to be the menace of total destruction."

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DEPARTMENT OF EXTERNAL AFFAIRS, CANADA.

NUMBERED LETTER

TO: THE UNDER-SECRETARY OF STATE FOR EXTERNAL AFFAIRS, OTTAWA, CANADA.

FROM: THE CANADIAN LEGATION, VIENNA, AUSTRIA

Security: CONFIDENTIAL

No: 149

Date: April 7, 1954

Enclosures: -

Air or Surface Mail:

Post File No:

Reference:

Subject: H-bomb.

DL (2) ~~and Enclosures~~ 5
European
Toronto file
Copy on 11794-D-40

Ottawa File No.
50219-D-40

D-1

References

13 APR 1954

D-2
File

9-12

Among the speakers at a communist sponsored meeting in Vienna held on March 31, was one Dr. Leopold Infeld described as a Polish physicist and "a close collaborator of Einstein". The communist press gave pride of place to a Japanese, Professor Yoshitaro Hirano, said to be a member of the Japanese Academy of Sciences who spoke of the effect of the American H-bomb explosion of March 1.

2. Professor Infeld is presumably the same gentleman who was at one time on the physics faculty of the University of Toronto. He told the meeting that the "good old" A-bomb of Hiroshima killed 100,000 people but the potentialities of the H-bomb were unlimited. Infeld is reported as pleading for agreement on an international ban on atomic weapons and that agreement on this issue would simplify other outstanding questions (e.g., the Austrian Treaty ?). He said that people all over the world should understand that the alternative is not between war and peace but between peace and total destruction of civilization.

[redacted]

s.19(1)

The Legation

Internal Circulation

Peter S
RCMP (SB)
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Done
KK
April 20/54

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Ext. 182A (Rev. 2/52)

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1954 APR 13 AM 10:46

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Ext. 1[illegible]

Encl. kept in file
U.N. Division
UNDiv
Commonwealth Div.
To note & file
WRB

OTTAWA FILE
No. 50219-D-40

Despatch No. 379

Date April 5, 1954.

SECURITY CLASSIFICATION
UNCLASSIFIED

D-1

FROM: HIGH COMMISSIONER FOR CANADA, NEW DELHI

TO: THE SECRETARY OF STATE FOR EXTERNAL AFFAIRS, CANADA

Reference

Subject: Mr. Nehru's Statement on Hydrogen Bomb, April 2, 1954.

13 APR 1954

3

Copies Referred To

No. of Enclosures 3

Post File No. 35-63-1

The Prime Minister, in the House of the People on Friday, April 2, 1954, stated India's position on the "latest of all the dread weapons of war, the hydrogen bomb". I attach three copies of Mr. Nehru's statement. 2 copies sd J.M.

2. The Prime Minister quoted eminent men to emphasize the "dread features and ominous prospects of the Hydrogen Bomb era", and pointed out how even scientists were becoming worried about the effect of hydrogen bombs. In this context he referred to a statement made by you that "A third World War accompanied by the possible devestation by new atomic and chemical weapons would destroy civilization."

3. Mr. Nehru reiterated the Indian position that weapons of mass destruction should be prohibited "by common consent, and immediately by agreement amongst those concerned, which latter is at present the only effective way to bring about their abandonment." He then suggested that "pending progress towards some solution, full or partial, in respect of the prohibition and elimination of these weapons of mass destruction, which the General Assembly has affirmed as its nearest desire, the Government would consider, among the steps to be taken now and forthwith, the following:"

(1) "Standstill Agreement"

Mr. Nehru suggested a "Standstill Agreement" in respect of actual explosions even if arrangements about the discontinuance of their production and stockpiling "must await more substantial agreement amongst those principally concerned".

(2) Publicity

He argued that full publicity should be given to the destructive power and the known effects of these weapons. He also proposed that some indication "of the extent of the unknown but probable effects" of the bombs should be made public.

... 2.

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1954 APR 13 AM 10:46

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(3) Disarmament Commission

He urged immediate and continuing private meetings of the Sub-committee of the Disarmament Commission to consider his "Standstill" proposal.

(4) Public Concern

He suggested that "active steps (should be taken) by States and peoples of the world" not directly concerned with the production of the bomb to exert their influence in arresting the progress of this weapon.

4. The Prime Minister in concluding his statement expressed India's sympathy for the victims of the recent explosions and to the people of Japan "to whom it has brought much dread and concern by way of direct effects and by the fear of food contamination". He also observed that "Asia and her peoples appear to be always nearer these occurrences and experiments and their fearsome consequences, actual and potential."

High Commissioner

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High Commissioner

1954 APR 12 PM 4:32

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PRESS INFORMATION BUREAU
GOVERNMENT OF INDIA

HOUSE OF THE PEOPLE

PRIME MINISTER'S STATEMENT ON HYDROGEN BOMB

New Delhi, April 2, 1954.

The following is the text of the statement made by the Prime Minister in the House of the People on April 2, 1954:-

I welcome this opportunity to state the position of the Government, and I feel sure of the country, on the latest of all the dread weapons of war, the Hydrogen Bomb and to its known and unknown consequences and horrors.

The United States of America and the Union of Soviet Socialist Republics, we are told, possess this weapon and each of these countries has during the last two years effected test explosions unleashing impacts, which in every respect were far beyond that of any weapons of destruction known to man.

A further and more powerful explosion than the one of the 1st of March has been effected by the UnitedStates and more are reported to have been scheduled to take place.

We know little more about the Hydrogen Bomb and its disastrous and horrible consequences than have appeared in the Press or are otherwise matters of general knowledge or speculation. But even what we do know, and the very fact, that the full facts of the effects of these explosions do not appear to be known or are ascertainable with any certainty even by scientists, point to certain

conclusions. .....

Document disclosed under the *Access to Information Act*
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conclusions. A new weapon of unprecedented power both in volume and intensity, with unascertained, and probably unascertainable range of destructive potential in respect of time and space, that is, both as regards duration and extent of consequences, is being tested, unleashing its massive power, for use as a weapon of war. We know that its use threatens the existence of man and civilisation as we know it. We are told that there is no effective protection against the Hydrogen Bomb and that millions of people may be exterminated by a single explosion and that many more injured, and perhaps still many more condemned to slow death, or to live under the shadow of the fear of disease and death.

These are horrible prospects, and it affects us, nations and perhaps everywhere, whether we are involved in wars or power blocs or not.

From diverse sides and parts of the world have come pronouncements which point to the dread features and ominous prospects of the Hydrogen Bomb era. I shall refer to but a few of them.

Some time ago, when the Hydrogen Bomb was first mentioned in public, Professor Albert Einstein said:

> "The Hydrogen Bomb appears on the public horizon as a probable attainable goal. .... If successful, radio active poisoning of the atmosphere, and hence an annihilation of any life on earth, has been brought within the range of technical possibilities."

That success appears now to have been achieved.

A U.S. Professor, Dr. Greenhead of the Cincinatti University said:

> "We are proceeding blindly in our atomic tests and sometimes we cannot predict the results of such blind moves." He said that "the U.S. was able to make these bombs out of relatively plentiful substances. If these are used to create an explosive chain reaction, we are nearing the point where we suddenly have enough materials to destroy ourselves."

Mr. Martin, the Defence and Scientific Adviser to the Government of Australia, is reported to have said after the Explosion of the 1st of March:

> "For the first time I am getting worried about the Hydrogen Bomb. ..... I can say as an individual that the Hydrogen Bomb has brought

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things to a stage where a conference between the four world Powers in mankind's own interests can no longer be postponed."

He is reported to have added that the fission was greater than expected by the scientists and that the scientists were more worried than anyone else.

Mr. Lester Pearson, the External Affairs Minister of Canada, referred to the use of such weapons in war when he said recently that "a third World War accompanied by the possible devastation by new atomic and chemical weapons would destroy civilisation."

The House will also recall the recent statement of Mr. Malenkov, the Soviet Prime Minister, on this subject, the exact words of which I have not before me, but which said in effect that modern war with such weapons in use, would mean total destruction.

There can be little doubt about the deep and widespread concern in the world, particularly among peoples, about these weapons and their dreadful consequences. But concern is not enough. Fear and dread do not lead to constructive thought or effective courses of action. Panic is no remedy against disaster of any kind, present or potential.

Mankind has to awaken itself to the reality and face the situation with determination and assert itself to avert calamity.

The general position of this country in this matter has been repeatedly stated and placed beyond all doubt. It is up to us to pursue as best as we can the objective we seek.

We have maintained that nuclear (including Thermo-nuclear), chemical and biological (bacterial) knowledge and power should not be used to forge these weapons of

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mass destruction. We have advocated the prohibition of such weapons, by common consent, and immediately by agreement amongst those concerned, which latter is at present the only effective way of to bring about their abandonment.

The House will no doubt recall the successive attempts made by us at the United Nations to secure the adoption of this view and approach.

At the last session of the General Assembly of the United Nations in 1953, as a result of amendments moved by our delegation to the Resolution on Disarmament, there were incorporated in the resolution that was adopted:

(1) An "affirmation" by the General Assembly of its "earnest desire for the elimination and prohibition of atomic, hydrogen, bacterial, chemical and other weapons of war and mass destruction and for the attainment of these ends through effective means."

(2) A provision for setting up of a sub-Committee, consisting of the Powers principally involved, to sit in private, and at places of its choosing to implement the purposes of the disarmament Commission.

The House is aware that this latter suggestion has lately engaged the attention of the Powers principally concerned, at Berlin and elsewhere and talks have taken place and, so far as we know, are continuing.

Time, however, apears to challenge us. Destruction threatens to catch us up, if not to overtake us, on its march to its sinister goal. We must seek to arrest it and avert the dire end it threatens.

contd.

Document disclosed under the *Access to Information Act*
Document divulgué en vertu de la *Loi sur l'accès à l'information*

Government propose to continue to give the closest and continuous consideration to such steps as it can take in appropriate places and contexts in pursuit of our approach and the common objective.

I have stated publicly as our view that these experiments, which may have served their one only useful purpose, namely, expose the nature of the horror and tragedy, even though but partly, should cease. I repeat that to be our considered position, and it is our hope that this view and the great concern it reflects, and which is world wide, will evoke adequate and timely responses.

Pending progress towards some solution, full or partial, in respect of the prohibition and elimination of these weapons of mass destruction, which the General Assembly has affirmed as its nearest desire, the Government would consider, among the steps to be taken now and forthwith, the following:

(1) Some sort of, what may be called, "Standstill Agreement" in respect, at least, of these actual explosions, even if arrangements about the discontinuance of production and stock-piling, must await more substantial agreements amongst those principally concerned.

(2) Full publicity by those principally concerned in the production of these weapons and by the United Nations, of the extent of the destructive power and the known effects of these weapons and also adequate indication of the extent of the unknown but probable effects. Informed world public opinion is in our view the most effective factor in bringing about the results we desire.

(3) Immediate.....

Document disclosed under the *Access to Information Act*
Document divulgué en vertu de la *Loi sur l'accès à l'information*

(3) Immediate (and continuing) private meetings of the sub-committees of the Disarmament Commission to consider the "Standstill" proposal, which I have just mentioned, pending decisions on prohibitions and controls etc., to which the Disarmament Commission is asked by the General Assembly to address itself.

(4) Active steps by States and peoples of the world, who though not directly concerned with the production of these weapons, are very much concerned by the possible use of them, also at present, by these experiements and their effects. They would, I venture to hope, express their concern and add their voices and influence, in as effective a manner as possible to arrest the progress of this destructive potential which menaces all alike.

The Government of India will use its best efforts in pursuit of these objectives.

I would conclude with an expression of the sympathy which this House and this country feels towards the victims of the recent explosions, Japanese fishermen and others, and to the people of Japan to whom it has brought much dread and concern by way of direct effects and by the fear of food contamination.

The open ocean appears no longer open, except in that those who sail on it for fishing or other legitimate purposes take the greater and unknown risks caused by these explosions. It is of great concern to us that Asia and her peoples appear to be always nearer these occurrences and experiments, and their fearsome consequences, actual and potential.

We do not.....

Document disclosed under the *Access to Information Act*
Document divulgué en vertu de la *Loi sur l'accès à l'information*

We do not yet know fully whether the continuing effects of these explosions are carried only by the media of air and water or whether they subsist in other strata of nature and how long their effects persist, or whether they set up some sort of chain reactions at which some have already hinted.

We must endeavour with faith and hope to promote all efforts that seek to bring to a halt this drift to what appears to be the menace of total destruction.

VRB/NL

1000/2.4.54/2037

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OUT OF THE DEPARTMENT OF EXTERNAL AFFAIRS

Document disclosed under the Access to Information Act
Document divulgué en vertu de la Loi sur l'accès à l'information

AFTER CIRCULATION TO THE APPROPRIATE OFFICERS IN THE DIVISION, IT SHOULD BE FILED..

5219-D-40
54 | 54

File Barton file BR

TOP SECRET
E.T.G./YSJ

Thermo-nuclear tests

At its meeting of April 1, 1954, the Cabinet noted the report of the Minister of National Defence and agreed that the Ministers of Defence Production, National Defence, Health and Welfare and External Affairs, together, decide on a statement which might be given and on answers to be made to questions which had or might be asked in the House of Commons regarding thermo nuclear tests held by the U.S. Atomic Energy Commission, and that, in future, the Minister of National Defence would normally be expected to answer questions on this subject where they clearly did not fall within the scope of another department.

DOWNGRADED TO SECRET
RÉDUIT A SECRET

Document disclosed under the Access to Information Act
Document divulgué en vertu de la Loi sur l'accès à l'information

Mary Macdonald/PW

March 30, 1954.

MEMORANDUM FOR ACTING UNDER-SECRETARY

50219-D-40
6 | 6

SUBJECT: Hydrogen Bomb Tests

Mr. Stanley Knowles asked Mr. Pearson a question on the Orders of the Day this afternoon.

MR. STANLEY KNOWLES: I wish to direct a question to the Secretary of State for External Affairs. Has the Canadian Government any information as to whether last Friday's hydrogen bomb explosion got out of control in the way that the one did on March 1? Can the Minister say whether the Canadian Government knows whether any further such tests are in prospect?

MR. PEARSON: Mr. Speaker, I have no information regarding the results of the explosion of the hydrogen bomb a few days ago. We know that there is to be another experimental explosion shortly. At the present time there is a qualified scientific official of the Canadian Government in Washington where I have no doubt he will be given all the information available on the results of the recent explosion and plans for future ones.

Mary Macdonald.

Done
WS

cc. to: Defence Liaison (1) Div.
Press Office.

000322

20-3-35(SS)

Document disclosed under the *Access to Information Act*
Document divulgué en vertu de la *Loi sur l'accès à l'information*

DEPARTMENT OF EXTERNAL AFFAIRS

ROUTE SLIP

DATE April 1 / 54.
SECURITY

TO: Mr. Smith.

FROM: W.H. Barton.

[ ] For Signature [ ] For Action
[ ] For Comments [ ] For Approval

For Information and
File [ ] Destroy [ ] Return [ ]

COMMENTS: *(This space is not for comments of a permanent character which should be formally recorded in a memorandum)*

Arnold:

This will interest you. I leave it to you to decide whether Mr. Pearson would want to see it.

W.H.B.

000323

Ext. 252 (Rev. 11/52)

Document disclosed under the *Access to Information Act*
Document divulgué en vertu de la *Loi sur l'accès à l'information*

(10057) Wt. 17818/5 100m 7/50 C.&Co. 745(8)

"Telegrams marked cypher (Typex) and cypher (Simplex) must first be paraphrased if communicated to persons outside British or United States Government Services; Any telegraphic re-transmission of a cypher telegram marked other than O.T.P. must be in a one-time system."

SHEN
L.B. PEARSON

TELEGRAM

FROM: THE SECRETARY OF STATE FOR COMMONWEALTH RELATIONS LONDON

TO: THE HIGH COMMISSIONER FOR THE UNITED KINGDOM.

SENT: 6:45 p.m. 30th March, 1954

RECD: 3:45 p.m. 30th March, 1954

50219-D-40
54 | 50

PRIORITY

IN CLEAR

CIRCULAR W. NO. 63

Johannesburg No. 29.

ATOMIC TESTS

Following is text of statement made by Prime Minister in Parliament this afternoon:

BEGINS

The development of the hydrogen bomb raises strategic and political issues which are so momentous and far reaching that they cannot be adequately discussed within the limits of a statement at the end of Questions. I do not propose to make any general statement on these issues. I will, however, deal briefly with some of the specific suggestions made in the particular Questions which have been placed on the Paper. In the first place, I must make it clear that our knowledge of these American experiments is necessarily limited. The United States Government are prevented by their own legislation from divulging secret information about them. I can say, however, from our own scientific knowledge that there is no foundation for the suggestion that these explosions

/are.....

Document disclosed under the *Access to Information Act*
Document divulgué en vertu de la *Loi sur l'accès à l'information*

(10057) Wt. 17818/5 100m 7/50 C.&Co. 745(8)

"Telegrams marked cypher (Typex) and cypher (Simplex) must first be paraphrased if communicated to persons outside British or United States Government Services; Any telegraphic re-transmission of a cypher telegram marked other than O.T.P. must be in a one-time system."

TELEGRAM

FROM :

TO : THE HIGH COMMISSIONER FOR THE UNITED KINGDOM.

are "incalculable" in the sense that those making the tests are unable to set limits to the explosive power of the bomb or to calculate in advance what the main effects will be. I greatly regret, as do our American friends, that any injury or damage should have been suffered by third parties as a result of the recent experiment; but I understand that the injuries suffered by persons outside the area which had been cleared for the purposes of the test - that is the first March test - are neither serious nor lasting.

It is being suggested that further tests should be the subject of international consultation or control. The restrictions imposed by the United States law to which I have already referred would make this impracticable. But even if this were not so, I should not myself be ready to propose it for reasons which I will now mention.

International rules have of course been prescribed to regulate the testing of conventional weapons; and these appropriately amended to meet the greatly increased risks of experiment with atomic or hydrogen weapons have, we believe, been carefully applied in all the experiments carried out by the United States authorities. I am sure that those responsible for conducting these tests will continue to take the most rigorous precautions to minimise the

/risks.....

Document disclosed under the *Access to Information Act*
Document divulgué en vertu de la *Loi sur l'accès à l'information*

(10057) Wt. 17818/5 100m 7/50 C.&Co. 745(8)

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TELEGRAM

FROM :

TO : THE HIGH COMMISSIONER FOR THE UNITED KINGDOM.

risks involved. The House will have noticed that since the explosion of the first of March they have taken the additional precaution of enlarging considerably the area which shipping and aircraft are warned to avoid on the occasion of further experiments of this nature.

It has now been announced in Washington by the Chairman of the Atomic Energy Commission, that another experiment was carried out in the Pacific on the twenty-sixth of March since that one of which we had already heard on the first of March. Both the experiment and the extra precautions taken to warn shipping in the vicinity are stated to have been successful. The experiment is described as being one of a "test series" and I understand from statements made by various American authorities that these two experiments that have taken place in March are part of a "test series" which will continue during April. I hope it may be found possible within the limits of existing United States legislation to give us information about what occurs. Our own instruments, which are highly developed of course, recorded the explosion of Friday last as soon as sound-waves or pressure-waves reached us.

As is well known, the President is appealing to Congress for a greater latitude of

/communication....

Document disclosed under the *Access to Information Act*
Document divulgué en vertu de la *Loi sur l'accès à l'information*

(10057) Wt. 17818/5 100m 7/50 C.&Co. 745(8)

"Telegrams marked cypher (Typex) and cypher (Simplex) must first be paraphrased if communicated to persons outside British or United States Government Services; Any telegraphic re-transmission of a cypher telegram marked other than O.T.P. must be in a one-time system."

TELEGRAM

FROM:

TO: THE HIGH COMMISSIONER FOR THE UNITED KINGDOM.

communication on certain nuclear matters with us. In view of what we have learned by our own scientific researches, and also in view of the progress of the Soviet's in this sphere, I am sure that consultation is to the advantage both of Great Britain and the United States. I trust nothing will be said here which will set back the many favourable tendencies in this direction which are now evident in the United States.

It is being suggested that I should endeavour to persuade the United States Government to abandon their series of experimental explosions of hydrogen bombs. We have no power to stop this. But I am sure that it would not be right or wise for us to ask that it should be stopped. When similar experiments were conducted by the Russians I cannot remember that anyone suggested that such representations should be made to the Soviet Government. The experiments which the Americans are now conducting in the Pacific are an essential part of the defence policy of a friendly power without whose massive strength and generous help Europe would be in mortal peril. We should indeed be doing a great dis-service to the free world if we sought in any way to impede the progress of our American allies in building up their overwhelming strength in the weapon which provides the greatest possible deterrent against the outbreak of a third world war.

/Together.....

000327

Document disclosed under the *Access to Information Act*
Document divulgué en vertu de la *Loi sur l'accès à l'information*
(10057) Wt. 17818/5 100m 7/50 C.&Co. 745(8)

"Telegrams marked cypher (Typex) and cypher (Simplex) must first be paraphrased if com- 'cated to persons outside British or United States Government Services; Any t aphic re-transmission of a cypher telegram marked other than O.T.P. must be m a one-time system."

TELEGRAM

FROM :

TO : THE HIGH COMMISSIONER FOR THE UNITED KINGDOM.

Together with our friends in the Commonwealth and our allies we have laboured long to secure international agreement on disarmament, and to limit the competition in armaments which is denying to the peoples of the world so many of the benefits which modern science could provide. But no satisfactory arrangements could be made to limit the use of atomic weapons except as part of an international agreement on disarmament as a whole. There could be no security in such an agreement unless it included provision for effective inspection and enforcement. We, ourselves, have repeatedly offered to accept such provision. But it would be idle to suppose that such an agreement could be concluded with any reasonable expectation of its observance until conditions of confidence between the nations have first been established. Sir, speaking for Her Majesty's Government, we shall lose no opportunity of securing an easement of world tension, but at the same time we must persevere with the other nations of the free world in our policy of upholding at the necessary level our united military strength.

ENDS

JM - 30 . 3 . 54 COPY SENT TO UKIO

000328

Document disclosed under the *Access to Information Act*
Document divulgué en vertu de la *Loi sur l'accès à l'information*

INCOMING MESSAGE

PY NO. 31 OF 33 COPIES

COPY

FROM: THE HIGH COMMISSIONER FOR CANADA, LONDON, ENGLAND

Original on 50219-AD-40

TO: THE SECRETARY OF STATE FOR EXTERNAL AFFAIRS, CANADA

Security Classification	
TOP SECRET	
File No.	
50219-D-40	
52	52

Priority	System	No.	Date
IMPORTANT	CYPHER-AUTO	309	March 26, 1954.

Departmental Circulation

MINISTER
UNDER/SEC
D/UNDER/SEC
A/UNDER/SEC'S
POL/CO-ORD'N SECTION

Done

Date

References

Reference:

DOWNGRADED TO SECRET
REDOUT A SECRET

Subject:

Following for the Minister from Robertson, Begins:

1. Lord Salisbury, who as Lord President of the Council is now the Minister generally responsible for atomic policy, asked me to come and see him this afternoon. Lord Swinton was with him. They wanted me to take up with you a question that Nye, I understand, has already raised in a preliminary way, namely, the sharing of non-military atomic information with the appropriate Australian atomic authorities.

2. Salisbury said that Menzies was pressing them pretty hard to act in this matter, which had been taken up during Cherwell's visit to Australia last October. The information which the United Kingdom wished to share with Australia had none of it been received from the United States, but under existing tripartite atomic security arrangements, it could not be divulged to Australia without at least notifying the United States in advance of their intention to do so.

3. Nye had reported that there were some reservations in Ottawa about the wisdom of approaching the United States on this subject at this time, when Congress had not acted on the President's recommendations for the revision of the McMahon Act. Salisbury wanted me to let you know that they had been worried about this aspect of the matter themselves, and had been specifically reassured by Makins, who was confident that the action which the United Kingdom would like to take would not be likely to prejudice the prospects of the amendments to the McMahon Act. He therefore hoped very much that our Ambassador in Washington would be authorized to concert with Makins on the form of a communication to be made to the United States Government on the subject. He hoped that it would take the form not of a request for concurrence or for express approval but of an informal expression of intention with which we would feel we could associate ourselves. Ends.

Done

Date

Ext. 230 (rev. 3/52)

Document disclosed under the *Access to Information Act*
Document divulgué en vertu de la *Loi sur l'accès à l'information*

File CWNB

Security Unclassified

MESSAGE FORM

OUTGOING

File No. 50219-D-40	
6	50 N

FROM: THE SECRETARY OF STATE FOR EXTERNAL AFFAIRS, CANADA

TO: The Canadian Ambassador,
Canadian Embassy, WASHINGTON, D.C.

Message To Be Sent		No. EX-475	Date March 26, 1954	For Communications Section Only SENT — MAR 26 1954
AIR CYPHER				
EN CLAIR ✓	X			
CODE				
CYPHER				

Priority

.....

ORIGINATOR

.....
(Signature)

Mary Macdonald
(Name Typed)

Div. O/SSEA

Local Tel. 5074

APPROVED BY

.....
(Signature)

Dr. MacKay
(Name Typed)

Internal Distribution:
S.S.E.A. ✓ - U.S.S.E.A. ✓
done mcL Mar. 29/54
American Div.
D.L. (1)
Press Office
Draft

Done.....

Date 3/29/54

Copies Referred To:

Done.....

Date.....

Ext. 97 (Rev. 1/52)

REFERENCE:

SUBJECT: Effect of Hydrogen Bomb Explosion in the Pacific.

The Minister was asked a question in the House of Commons this afternoon by Mr. Goode, M.P. for Burnaby-Richmond, B.C.

Mr. Goode: "It is reported in the press today that serious results have occurred from a reported explosion of a hydrogen bomb in the Pacific. In view of that, I would ask the minister: (1) whether the minister is being kept informed by certain governments regarding the effect of the bomb, and (2) if there is any possibility of radio-active dust falling upon cities on the Canadian pacific coast?"

Mr. Pearson: "Mr. Speaker, my hon. friend was good enough to give me notice of this question. The answer to it is as follows. Although the Canadian government has not been given any information by other governments, and in this case, of course, it would be the government of the United States, concerning the effect of the range of the recent explosion of this hydrogen bomb in

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EXTERNAL AFFAIRS

1954 MAR 26 PM 6:41

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Document divulgué en vertu de la *Loi sur l'accès à l'information*

the Pacific, there is regular consultation with the United States government on the effects of nuclear explosions generally. I am not, of course, in a position to give a dogmatic reply to thesecond part of the question, nor I suppose, is any one else, but from information available we do not anticipate concentrations which could possibly be harmful on the Pacific Coast."

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Document divulgué en vertu de la *Loi sur l'accès à l'information*

Mr. Pearson

3342

March 26, 1954.

50219-D-40
54 | 54

MEMORANDUM FOR THE MINISTER:

Question by Mr. T. H. Goode, M.P.

Your office has been informed that Mr. T. H. Goode, Member for Burnaby-Richmond, proposes to raise the following question in the House today:

Question

No. 1. Whether the Minister is being kept informed by certain governments regarding the effect of the bomb; and

No. 2. If there is any possibility of radio-active dust falling upon cities on the Canadian Pacific Coast.

The following answer, which has been cleared with Dr. Solandt, is suggested:

Answer

No. 1. Although the Canadian Government has not been given any information by other governments concerning the effects of the reported recent explosion of ~~a~~ hydrogen bomb in the Pacific, there is regular consultation with the United States Government on the effects of nuclear explosions generally.

No. 2. From information available we do not anticipate concentrations which could possibly be harmful.

Comment on the above Answer:

Although the above answer has been cleared with Dr. Solandt, it may imply that we are getting more information about the effect of atomic weapons than has actually been the case so far. It is evident, however, that the U.S. authorities have been more forthcoming recently than was formerly the case.

26-3-22(US) Earl
26.3.21(US)

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Document divulgué en vertu de la *Loi sur l'accès à l'information*

Although the question is addressed to you, I suggest you might wish to clear with Mr. Claxton, since the information requested is primarily military in character and since the information on which the answer is based comes from D.R.B.

I enclose a copy of this memorandum, less the last paragraph, should you wish to pass it to Mr. Claxton.

R.A.M.

Document disclosed under the *Access to Information Act*
Document divulgué en vertu de la *Loi sur l'accès à l'information*

Arnold Smith/mr

Fut 2249

SECRET

File: 50219-D-40

To: Acting Under-Secretary 50219-D-40 March 9, 1954.
6 | 6

Despatch No. 383 of March 2, 1954 from Washington on the "Development of atomic and thermo-nuclear weapons" was in response to a telegram from this office. However, it should probably be kept in Defence Liaison (1) Division files.

2. It might be worth while to refer a copy of this despatch, and especially of Cole's speech, to National Defence, Health and Welfare, the Prime Minister's Office, Governor-General, and our posts abroad?

A.C.S.

Document disclosed under the *Access to Information Act*
Document divulgué en vertu de la *Loi sur l'accès à l'information*

MEMORANDUM

From THE OFFICE OF
THE SECRETARY OF STATE FOR EXTERNAL AFFAIRS

To THE MINISTER 50219-D-40 March 4, 1954

George Davidson telephoned me and asked whether I could send him, for Paul Martin, a copy of Representative Cole's speech in Chicago on the hydrogen bomb, to which you referred last night. I therefore sent a copy over.

2. I asked George Davidson whether his department would be getting a copy of the film on the hydrogen bomb explosion. He said that they expected to do so within a few weeks. It would probably be the full unexpurgated version. I said that I thought you would be interested in seeing it, and that I would like to do so too. Davidson promised to arrange this.

A.C.S.

Document disclosed under the *Access to Information Act*
Document divulgué en vertu de la *Loi sur l'accès à l'information*

INCOMING MESSAGE

ORIGINAL

FROM: THE CANADIAN AMBASSADOR TO THE UNITED STATES

TO: THE SECRETARY OF STATE FOR EXTERNAL AFFAIRS, CANADA

Security Classification
UNCLASSIFIED
File No.
50219-D-40
5-4 | 50

Priority	System	No.	Date
IMPORTANT	EN CLAIR	WA-352	March 3, 1954.

Departmental Circulation

MINISTER
UNDER/SEC
D/UNDER/SEC
A/UNDER/SEC'S
POL/CO-ORD'N SECTION

Done [redacted]

Date [redacted]

References

Done

Date

Reference: Your EX-334 of March 3.

Subject: Atomic Energy.

You should by now have the text of representative Cole's speech on atomic energy, requested in your telegram EX-306 which reached us for action only on Friday, February 26, was forwarded in Tuesday's bag No. 478 under cover of letter No. 383 of March 2, 1954.

Ext. 230 (rev. 3/52)
53 P. 179

Document disclosed under the *Access to Information Act*
Document divulgué en vertu de la *Loi sur l'accès à l'information*

CLEARED
COMMUNICATIONS
EXTERNAL AFFAIRS

BY 2 23

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Security CONFIDENTIAL

MESSAGE FORM
OUTGOING

File No.	
50219-D-40	
54	58

FROM: THE SECRETARY OF STATE FOR EXTERNAL AFFAIRS, CANADA

TO: HEAD OF POST, WASHINGTON, D.C.

Message To Be Sent		No.	Date	For Communications Section Only
AIR CYPHER		EX.334	March 3, 1954	SENT — MAR 3 1954
EN CLAIR				
CODE				
CYPHER AUTO	X			

Priority
IMPORTANT

ORIGINATOR

(Signature)

Arnold Smith/mh
(Name Typed)

Div. O/SSEA

Local Tel. 5074

APPROVED BY

(Signature)

[redacted]
(Name Typed)

Internal Distribution:
S.S.E.A. - U.S.S.E.A.

A/USSEA
D.L. (1)

Done

Date

Copies Referred To:

Done

Date

Ext. 97 (Rev. 1/52)

REFERENCE: My telegram EX-306 of February 25, 1954.

SUBJECT: Atomic Energy.

Minister is ~~very~~ disappointed that the text of Cole's ~~[illegible]~~ important speech of February 17th, requested by telegram a week ago, has not been received. He had wished to have this text for a speech he is making tonight. However, he still hopes that it will be possible to obtain text. Grateful if you would telegraph whether it is obtainable.

SECRETARY OF STATE
FOR EXTERNAL AFFAIRS

3-3-20 (SS)

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AFFAIRS
1994 MAR 3 AM 11:01

Document disclosed under the *Access to Information Act*
Document divulgué en vertu de la *Loi sur l'accès à l'information*

DEPARTMENT OF EXTERNAL AFFAIRS, CANADA.

NUMBERED LETTER

THE UNDER-SECRETARY OF STATE FOR EXTERNAL AFFAIRS, OTTAWA, CANADA.

Security: SECRET

No: 383

FROM: The Canadian Embassy, WASHINGTON, D.C.

Date: March 2, 1954.

Enclosures: 5

Reference: Your telegram EX-306 of February 25.

Subject: Development of atomic and thermo-nuclear weapons.

Air or Surface Mail:

Post File No:

Ottawa File No.
5-0219-D-40
5-4 | 5

References

D-1

3 MAR 1954

I attach for your information five copies of the speech made on February 17 by Representative Sterling Cole (R-N.Y.), Chairman of the Joint Congressional Committee on Atomic Energy, which were requested in your telegram under reference.

2. Much of the speech was devoted to a description of the awesome power of the thermonuclear device tested at Eniwetok in 1952. It seems evident that Mr. Cole's remarks on this score were based on the film made of the test which has been seen by a number of Canadian officials including the Canadian Section of the PJBD and the Canadian Civil Defence authorities who were in Washington recently. The film is still highly classified, although consideration is being given to making it available to the public after some censoring in the interests of security.

3. The other point of interest to us made by Representative Cole in his speech concerns continental defence. He pointed out that the limited warning system now in existence would give the United States only a few minutes advance notice of an enemy attack. Large sums of money, he said, are necessary to establish and maintain a continental defence system commensurate with the peril to the United States. He asserted, however, that what continental defence demanded beyond all else was an end to the defeatist attitude that the economic and technical problems to be faced in providing an adequate defence of the continent was beyond the ken of United States experts. He made no mention of the importance of Canadian co-operation in any adequate system of continental defence.

4. While the attachment to this letter is, of course, unclassified, I have given the letter a security classification because of the reference in it to the film on the Eniwetok test.

1 copy of speech retained by the Minister

The Embassy.

Internal Circulation

DM National Def (2)
Pres AECB
" AECh
CWRB
ECO & (3)
See Cab
Am Wsw
U.N. "
Members IW PD
Commonwealth Dw
N. Z. (2)
European Wsw

Distribution to Posts

WA (1)
D.M. Health & Welfare (Welfare)
Civil Defence Coordinator

Ex. 3/1124 (Rev. 2/52)

Document disclosed under the Access to Information Act
Document divulgué en vertu de la Loi sur l'accès à l'information

From the Offices of
Rep. Sterling Cole (R.,N.Y.)
Chairman, Joint Committee on Atomic Energy

FOR RELEASE
WEDNESDAY, FEBRUARY 17, 1954
12:30 P.M. (CST)

Remarks of Representative Sterling Cole at the Joint Luncheon of the 38th Annual Convention of the National Sand and Gravel Association and the 24th Annual Convention of the National Ready Mixed Concrete Association, Conrad Hilton Hotel, Chicago, Ill.
February 17, 1954 at 12:30 P.M. (CST)

To be in Chicago, and address the members of the National Sand and Gravel Association and the National Ready Mixed Concrete Association on the subject of our atomic energy program, is a welcomed relief from Washington's daily pressures.

Ordinarily, one would not think that the businesses in which you are engaged would have a close connection with atomic energy. However, mere ideas of atomic energy application are useless by themselves--they must be reduced to the brick, steel and concrete of manufacturing plants.

During the last half of 1953, the construction costs of atomic energy plants averaged about $100 million monthly, or about 4% of the national continental average. They are expected to reach $125 million monthly during the early part of 1954, or about 5% of the estimated construction expenditures in the entire United States. I know that you and your companies are contributing your share of effort toward making America atomically strong--and I hope--making your share of the profits.

It is particularly appropriate to be discussing atomic energy in this city because it was here--on a squash court in the shadows of The University of Chicago--that only twelve years ago scientists opened the Pandora's Box which loosed the atom upon an unsuspecting world. It was here that the idea of the chain reaction theory was proven; it was here that men learned that the atom could be split and its energy could be harnessed and controlled. What had been a plaything in laboratories became reality.

But unlike other weapons which have emerged from previous wars atomic energy could not be confined to Pentagons, munitions factories and general staffs. Its nonmilitary applications and political implications have put it squarely into the realm of national and international economic, cultural and political affairs.

We now face problems whose solution will require all the ingenuity, good will and statesmanship with which we are endowed if the atom is to become the servant and not the master of mankind.

It might have been more interesting, perhaps, to have concentrated our discussion today on the relation of atomic energy to our civilization; to speak of the atom and industry; to gaze into the crystal ball and speculate on the manifold coming peacetime applications of atomic energy. It might have been intriguing to talk of the part radioactive isotopes, a by-product of atomic fission, are coming to play in diagnostic medicine, and in cancer research and treatment.

However, as a member of the Joint Committee on Atomic Energy for the past eight years, and as a member of the Armed Services Committee, I am today constrained to talk about the military aspects of our atomic energy program.

The whole tempo of atomic development, both on the peacetime and military side, has proceeded faster--much faster--than most of us anticipated eight years ago, when Hiroshima heralded the beginning of a new historic epoch. While pondering the destruction visited upon Japan by the first atomic weapons, how many of us would have predicted that our nation's atomic stockpile would today include fission weapons--so-called "ordinary" atomic bombs--twenty-five times more powerful than the Hiroshima model?

How many of us, above all, anticipated that both we and the Soviets would by now have achieved hydrogen explosions, whose churning cauldrons of consuming heat, cyclonic winds and lethal radiation would dwarf the mushroom clouds proclaiming the end of the war with Japan?

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Three years ago this month, when our nation began active work on the hydrogen bomb, many scientists held it beyond the ability of man to create a thermonuclear explosion. Others supposed that the harnessing of hydrogen energy for military purposes would require a giant developmental effort extending over many years. Then in the fall of 1952--less than three years after President Truman's go-ahead order on the hydrogen bomb--we produced a full-scale hydrogen explosion at our Eniwetok Proving Grounds in the Pacific. This represented a brilliant scientific achievement. Yet the nucleus of the hydrogen atom yielded up its secrets much more readily than even the most ardent advocates of all-out hydrogen development had expected.

The historic moment when mankind entered the hydrogen--the thermonuclear--age has been recorded on movie film, and I hope that within a few weeks the American people will be able to witness in reproduction the full fury of a hydrogen explosion.

That thermonuclear test of 1952 completely obliterated the test island in the Eniwetok Atoll. It tore a cavity in the floor of the ocean--a crater--measuring a full mile in diameter and 175 feet in depth at its lowest point. Filling this crater would require more than four-and-one-half million truckloads of gravel. The diameter of this crater would encompass all of downtown Chicago, reaching from Madison Street on the north to Polk Street on the south, from Michigan Avenue on the east, almost to Halsted Street on the west.

Within the diameter of this crater, one could place 140 structures the size of our nation's Capitol, or 90 buildings the size of this city's Merchandise Mart.

Nor was this all. If it occurred in a modern city, I am told that the heat and blast generated in the 1952 hydrogen test would cause absolute destruction over an area extending three miles in all directions from the point where the hydrogen device exploded. This is an area of complete devastation--using the word "complete" in its most precise meaning--six miles in diameter. The area of severe-to-moderate damage would stretch in all directions to seven miles from ground zero. Finally, the area of light damage would reach to ten miles from the point of detonation. In other words, an area covering 300 square miles would be blanketed by this hydrogen explosion.

If a thermonuclear weapon with destructive effects comparable to that of our 1952 test shot were to be exploded over the Chicago Stadium, the effects of the explosion would be felt well beyond Jackson Park on the south, beyond Maywood on the west, and in Evanston on the north. The area of severe-to-moderate damage would reach almost to the Midway Airport on the south, past Oak Park on the west, and beyond Foster Avenue on the north. The area of absolute destruction would reach to the lake front on the east, to the intersection of Archer and Ashland Avenues on the south, beyond Garfield Park on the west, and to Fullerton Avenue on the north.

This is the appalling meaning of the hydrogen bomb. But it need not leave us completely dismayed nor distraught. I believe it is more sinful to conceal the power of the atom than to reveal it. If telling the American people the facts about the atom be "atom rattling" then I confess my guilt. My faith in the capacity of the American people to face up to peril is boundless.

That test whose fearful effects it has been my duty to describe took place almost a year-and-a-half ago. Security keeps me from commenting on where our hydrogen weapons program now stands, and from outlining the directions in which it is now moving. But I can assure you that it is moving. One fact should be obvious: hydrogen energy constitutes no exception to the laws of scientific and technical advancement. The 1952 tests did not mark the end of the line in hydrogen research. Terrible secrets still lie undiscovered in the fusion of nuclei. In due course, we can be sure, the ingenuity of man will ferret out these secrets--with fateful consequences for our civilization, and for good as well as evil. Today we have in being an entire family of atomic weapons. We must now adjust our thinking to the prospect of an entire family of hydrogen weapons, comparable in versatility to the fission weapons of today.

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The Soviet hydrogen test of last August should have answered, once and for all, those who naively imagined us to hold a monopoly of knowledge and skill in thermonuclear research and development. It may be possible to debate whether the Soviet dictators at this very moment have it in their power to launch a crippling atomic and hydrogen blow at our country--though the recent unveiling of the new long-range bombers of the Red air force should counsel against complacency on this score. But the question of whether the Soviets will have this capacity one or two or three years from now should not be open to reasonable debate. Beyond any question, they will.

We are now crossing the threshold into an age when one plane, carrying one hydrogen bomb, can unleash on a target a cargo of destructive force exceeding all the TNT dropped upon Germany, Japan, and Italy combined throughout all of World War II.

It need hardly be said that the hydrogen bomb is ideally suited to a sneak attack--it places an enormous premium upon striking first. In 1914, again at Pearl Harbor, once more with the invasion of South Korea--aggressors have begun wars believing that the advantage of surprise assault would lead to final victory. Each time the test of battle has proved the aggressors wrong. But this need not always be so. Should our nation ever fall victim to surprise nuclear assault, I am confident we could still maintain our capacity to deal our enemies a retaliatory blow of great effect, but there can be no guarantee of ultimate victory unless we are constantly alert and prepared.

Our best and surest means of preventing nuclear war lies in maintaining and even increasing the strength of our retaliatory striking forces. This is fundamental. But a program for survival which relied exclusively upon our ability to launch a nuclear counter-blow would be only half complete. It is not enough to notify an enemy that the attempted destruction of our own cities would be automatically answered by the destruction of his. If it is possible, and it is, we must make it clear that a nuclear Pearl Harbor against us would fail. We must make it clear that our continental defense system could cripple and repel any air fleet directed against us.

It is no secret that our present continental defense system--our existing program for detecting and frustrating a nuclear attack against the United States--falls far short of serving our enemies with such notice. At very best, we might now hope to intercept one out of every four hostile bombers in the event of a massive assault against our cities. It is entirely possible that nine out of ten enemy planes might reach their targets--and this in an age when only one hydrogen weapon would be needed to destroy the vitals of any American city, be it Chicago, New York, or Detroit.

President Eisenhower and the members of the defense establishment have instituted encouraging remedial steps. Yet I believe that the acceleration in the nuclear armaments race now demands an acceleration of our efforts to improve our defenses.

It may be contended that no continental defense system now foreseeable could guarantee ninety or one hundred per cent success in intercepting enemy aircraft. I agree--but I point out that this is no argument for resting content with a system only ten or twenty per cent effective.

It may be argued that strengthening our defenses at the cost of weakening our offensive striking power would represent military folly. I concur--but I know of no responsible person advocating such a course. I remind you, in addition, that adequate continental defense preparations are as vital for the protection of our striking forces as they are for the protection of our cities. Without sufficient advance warning of a hostile attack, the planes and bases of our Strategic Air Command might well be destroyed before a retaliatory blow could ever be mounted.

It may be contended that any attempt to win military security through reliance on a Maginot Line philosophy is foredoomed to failure. Again I concur--but I reject the notion that a step-up in our defense preparations represents Maginot-Line thinking. I point out, moreover, that it was the excellence of her radar warning system and interceptor aircraft and the sheer valor of her airmen which saved England from destruction during the Battle of Britain.

There is nothing secret or obscure about what is needed to improve our continental defenses many-fold. Today's limited warning system would give us for the most part only a few minutes advance notice of an enemy

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attack. We need new and imaginative approaches to extending the range and accuracy of our radar detection system. We need more of the high-performance, all-weather interceptors just now coming off the assembly lines. We need more, many more, anti-aircraft missiles and rockets, of which Nike is only the first example.

The time is coming when large, though not astronomical, sums of money will be needed to establish and maintain a continental defense system commensurate with our peril. Yet the urgent need of the moment is less for dollars than for determination, less for resources than research, less for manpower than for bold and imaginative brain power.

Here is but one example of the kind of specific, tangible steps we can now take in attacking this problem. I refer to the use of atomic energy in repelling hostile attacks against our nation. During World War II, the destruction of a single enemy bomber normally required the expenditure of thousands of anti-aircraft shells. With the very limited destructive power of ordinary "ack-ack," a near-miss was of little avail in intercepting enemy bomber formations. Today, when a single plane which penetrated our defenses might cause casualties measured by the million, we cannot afford near-misses. Fortunately, there is a way out. Today, it is possible to manufacture small-size atomic weapons specifically adapted to anti-aircraft defense. The destructive range of these devices is such that they could assure hitherto unattainable degrees of success in destroying hostile bombing fleets.

Provided we are willing to commit the necessary resources to such a program--and the resources would not be huge--it is entirely within our capacity to obtain tens of thousands of such atomic missiles. It is entirely within our capacity to guard all vulnerable approaches to the North American continent with interceptor squadrons and guided missiles armed with atomic warheads, and to have these warheads in such profusion that an enemy seeking to penetrate our defenses would confront a barrier of atomic firepower.

Creating a defense system built around atomic deterring power would no doubt involve additional facilities for producing fissionable materials. But the money sums required would by no means be prohibitive. It is my hope, moreover, that private enterprise, using private funds, could participate in such an expanded atomic program by building reactors turning out both power and atomic materials.

What continental defense now demands beyond all else is an end to the defeatist talk which suggests that, both on economic and technical grounds, adequate defenses are beyond our grasp. Devising such a system presents far fewer problems than we confronted in our wartime atomic bomb effort. This nation of ours has not prospered and grown great by heeding the counsel of those who tell us what we cannot do.

The atom has brought us face-to-face with hard choices in offensive strategy and in the defense and protection of our cities and our people. Behind the dark picture of havoc that nuclear and thermonuclear war would wreak, however, there is a bright light--now but dimly seen--of great promise. Atomic energy, unlike other engines of destruction, is amenable as much or more to beneficient use as it is to war. If we pursue these peaceful applications with dedication and with zeal we may well find a way to end the strife and tensions caused by material want in the world today. Atomic energy gives us not only the ways and means to seek out and understand the causes of disease and of human misery, but it can with wise and proper development, provide an answer to the critical power shortages and consequent low standards of living that now exist in many areas of the world less fortunately endowed than our own bountiful America. Our own children or their children may, I fancy, look back at our times full of wonderment at our short--sighted concentration on the explosive application of atomic energy for war, when the peaceful uses of the atom, if pursued with comparable intensity, would have given us the means to end the very causes of war.

Whether we like it or not, atomic energy and inter-continental bombers have made us all citizens of the atomic world. In the days ahead, and there will be many when upon the acts of our elected leaders will depend the future of untold generations, each of us must look deep within himself to find the moral guideposts to the right course. With dedication to the cause of good, and in full humility, may we act wisely that atomic energy shall be the touchstone of a golden future, and not the tombstone of mankind.

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TO: THE CANADIAN AMBASSADOR, WASHINGTON, D.C.

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REFERENCE:

SUBJECT: Atomic Energy.

According to press reports, Representative W. Cole, Chairman of the Congressional Atomic Energy Committee, made a speech on Wednesday, February 17, in Chicago on the hydrogen bomb. Grateful if you could obtain and send us full text of this statement.

SECRETARY OF STATE
FOR EXTERNAL AFFAIRS

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America's Atomic Dilemma

[We invite readers to study with care the implications of the important article by Professor P. M. S. Blackett which we publish below. His dispassionate analysis of American thinking on atomic weapon development in the U.S. and the Soviet Union leads to two significant conclusions. First, the stockpile of atomic bombs is subject to the law of diminishing returns: a point is reached when neither side can profit by additions to the stockpile because its adversary has in any case enough bombs to deliver a catastrophic blow. Secondly, in the absence of a system of active and passive defence which would be astronomically expensive and, in all probability, beyond the bounds of political feasability, the U.S. has already lost the joker in its hand—the ability, once thought to be assured, to sustain the cost of winning the ultimate all-out war.

If these conclusions be accepted, a number of questions arise:

(1) Since both sides now have a real motive to economise in the manufacture of atomic weapons, is it unduly sanguine to hope that, as between the U.S. and the U.S.S.R., there may be an agreement, in practice if not in terms, at any rate to place limits on stockpiling?

(2) With powers of retaliation already sufficiently equalised, is it not possible to lighten the atrocious burden of Defence Budgets by economising in the production of long-range bombers, designed exclusively for the strategic delivery of atomic bombs? In his broadcast apologia for the strategic bomber this week, Sir John Slessor evaded substantially the consideration that its employment for the purposes postulated courts mutual suicide by the adversary nations.

(3) If, as must be concluded, it is futile to base diplomacy on the ultimate threat of the use of a weapon which, in fact, cannot be used without disaster to the user, what sense is there in the "press-button" strategy towards which President Eisenhower and Mr. Dulles now appear to be moving?

(4) If the two Great Powers are now deadlocked in an atomic impasse which none the less leaves scope, in the absence of wise statesmanship, for a deplorable series of destructive *local* conflicts, does it not follow that much Big Power policy is now bluff and that rather less powerful nations, such as Britain, have an increasingly important part to play in urging policies aimed at avoiding such conflicts by timely and realistic agreement?—ED., *N.S. & N.*]

A GREAT debate is in progress in the United States on the implication of the new situation which has arisen from the belief that the Soviet stockpile of atomic bombs is already of a substantial size and that operational Soviet hydrogen bombs may not be far off. It is not easy to keep track of the form the debate is taking; but the appearance in this country of a book* by Gordon Dean, lately chairman of the Atomic Energy Commission, provides an opportunity to try to piece together some account of what the debate is really about. Mr. Dean has given an extremely readable account of most of the important aspects of the United States atomic energy programme. He was Chairman of the A.E.C. from February, 1950, to June, 1953, when he resigned. Many details are given of the U.S. atomic energy programme, and its vastness is well conveyed. Incidentally, he gives figures which show that this industry for making atomic weapons consumes more electricity than the whole of Great Britain.

To a European, much the most important parts of the book, to my mind, are those relating to the military role of atomic bombs and of their influence on tactics, strategy and international affairs. For these are matters which decisively affect the Defence requirements and so the domestic and foreign policies of individual European nations. What Mr. Dean says about these military questions has special interest because he is not a military man. The fact that he is an academic lawyer by profession makes it probable that what he writes reflects the atmosphere of Washington military circles at the time when he was Chairman of the A.E.C. rather than his own personal views. Indeed, any doubt that Mr. Dean's duties as Chairman lay solely in the civilian field and that he was not in close touch with military and diplomatic affairs is set aside by the emphasis he gives to his membership of a special committee of the National Security Council, together with the Secretary of State and the Secretary of Defence.

His most important conclusions seem to be somewhat as follows. The U.S. stockpile of bombs is already sufficiently large to make it possible that an all-out attack on the U.S.S.R. would destroy all her main cities and a large part of her industry. A broad hint is given that the American stockpile now amounts at least to a few thousand atomic bombs: perhaps about 5,000 would be a fair guess. This is certainly large enough to inflict a major blow against the U.S.S.R., assuming an appreciable fraction of the bombs reach their target. For it will be remembered that rather more than 1,000 atomic bombs of the Hiroshima type would have been required to inflict on Germany and the occupied territories the same material damage as was done by the 2.7 million tons of chemical bombs actually dropped on them.

Mr. Dean reminds us that quite a different conclusion was popular at one time. Referring to the Summer of 1945, Mr. Dean writes: "The Japanese surrender, then, found the United States in the uniquely favourable position of being the sole possessor of a weapon that was almost universally credited with a capacity to destroy cities on a ratio of one bomb per city, and to end wars on a ratio of two bombs per war." Seldom can an arithmetical misapprehension have had such disastrous consequences!

Mr. Dean's next conclusion relates to the effects of Soviet atomic progress.

> An enormously important new factor was introduced into this world situation in 1949, when the first atomic explosion took place in the Soviet Union. This may not have been too important in itself, for it is a long way from a first test bomb to a significant stockpile. But it was of the utmost importance so far as the future was concerned, for it meant that one day the Russians would undoubtedly have enough bombs to deliver an atomic attack on the U.S. and the other countries of the free world, if they chose to do so. Thus, since 1949, we have been watching the value of the main ingredient in our national defence arsenal gradually diminish as the Russians build towards a stockpile of atomic bombs which they will feel, no matter how crude their design, will some day reach sufficient proportions *to cancel out the atom as an instrument of warfare*. If such an *impasse* occurs, the United States would appear to be left in a rather unenviable position. The most useful product of our technological competence would appear to be lost to us, except as a deterrent to the use of A-bombs by the enemy, and the Russians would appear to be free to take full advantage, in world, military and diplomatic affairs, of their vast superiority in manpower and their highly favourable strategic position dominating the Eurasian land mass.

No specific figure is given for the probable Soviet stockpile today, but by implication it can hardly be believed to be less than a hundred or so. One other writer puts it at 300, and yet another at 3 per cent. of that of America. Mr. Dean in his chapter "Behind the Iron Curtain" emphasises that it is most unwise to assume that the Soviet rate of technological development is appreciably behind that of the United States, and emphasises that it is now four years since the first Soviet trial bomb was exploded. A few hundred Soviet bombs might well be adequate to inflict serious damage to the United States, assuming that a reasonable fraction "got home."

As a remedy for this *impasse*, which Mr. Dean often refers to as existing now rather than as something to come about in the future, great emphasis is laid on the successful development in the U.S. of atomic tactical weapons. It is evident that some very brilliant scientific work has enabled atomic bombs to be made which are certainly much cheaper and smaller than the earlier models, and possibly also, though Mr. Dean is not explicit on this point, smaller in explosive power. Their smaller size allows them to be delivered as atomic shells from a 280 mm. cannon or by small and fast aircraft. One report suggests that the cost of an atomic bomb has been brought down to about £100,000, roughly that of a heavy tank.

The further argument is best left to Mr. Dean.

> What effect does the introduction of this new factor have on the *impasse* we appear to be drifting toward in the strategic use of atomic bombs? Briefly, it could mean that, while we might be unwilling to use our bombs strategically against Russia for fear of retaliation, and Russia might be unwilling to use hers against us for the same reason, we would nevertheless be in a position to use our tactical weapons in the field, thus so increasing the fire-power of our forces that Russian manpower superiority would be virtually cancelled out. Under this line of reasoning, our atomic stockpile once again becomes a deterrent, not only to an atomic attack against us, but also to an act of major aggression against us or our allies with conventional arms.

The last sentence seems to me very important, for it implies clearly that an act of aggression with conventional arms against the U.S. or her allies would not necessarily be countered by a strategic atomic attack on the U.S.S.R., for fear, of course, of provoking a similar attack on the U.S. This is the essence of the *impasse*. In regard to long-range strategic bombing of centres of civilian population, a hundred or so Soviet bombs have cancelled out a few thousand U.S. bombs. The argument continues:

> In answer to this, one might of course say: "But if we used atomic weapons in any form at all—even tactically in the field—shouldn't we expect the Russians to retaliate with a strategic

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* *Report on the Atom.* By GORDON DEAN. *Eyre & Spottiswoode.* 16s.

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attack against the United States interior, or against our allies, assuming they were in a position to do so?" I can only reply that, if I were a Russian, I would certainly think twice before I did so. Our retaliation against the Russian heart-land in such an event would be terrifying.

One might also ask: "But isn't it possible for the Russians to make these tactical weapons and use them against our troops in the field?" Of course, it is possible. But the important thing to remember here is that, even in that event, we will have succeeded in getting the competition back on a basis where the premium is no longer on manpower, where we are at our weakest, but rather on technological competence and production capacity, where we are at our best.

The gist of all this is that U.S. military opinion, if we are right in assuming that this is what Mr. Dean is reflecting, considers that the huge United States stockpile and the fleet of long-range strategic bombers to deliver it are still the essential deterrent to a Soviet strategic atomic attack on America. However, the opinion is clearly gaining ground that the great American atomic retaliatory power can no longer be considered as an effective deterrent against aggression even on a massive scale by conventional arms. This would have to be met by conventional arms supported by a large number of atomic bombs and shells for tactical use.

In view of this argument, it is not altogether surprising that Mr. Dean does not lay any very clear stress on the role of the H-bomb. In fact, he says, "There has been some controversy among experts about the real significance of the H-bomb." No doubt there has! Of its explosive power, he only tells us that it can be made "many times more powerful than the most powerful A-bomb." (President Eisenhower has told us that ordinary atomic bombs 25 times stronger than the early types have been made.) Mr. Dean then shows that if an H-bomb were a thousand times as powerful as the first A-bomb, its radius of destruction would be only ten times as big. This fact he calls "a small ray or hope," and adds: "I believe there is a law of diminishing returns working on the side of humanity."

Looking further into the future, Mr. Dean envisages a situation in which the U.S. no longer attempts to keep ahead of the U.S.S.R.

> It does not follow, however, that we need match them twenty to one, or ten to one, or even one to one, in atomic bombs for ever—certainly not if deterrence is our primary objective, as indeed it should be. Simply staying "ahead" of the Russians, or even "far ahead" of them, is not the goal. The weapons goal for the United States should be a sizeable stockpile, no matter what the Russian stockpile may be. Deterrence is accomplished when a sizeable number is reached, for "sizeable" means that point where an enemy, calculating the risk of retaliation, says to himself "No matter how many atomic bombs I may be able to deliver on the cities and on the industrial and military targets of the United States and its allies, I simply cannot afford to take the punishment which retaliation by the United States would bring."

The essence, then, of the *impasse* described by Mr. Dean is that Soviet atomic bombs, believed to amount to no more than perhaps 3 per cent. of those of the U.S., have already partially neutralised the diplomatic and military value of the American stockpile. An important factor in this situation is the relatively low level of the active and passive defence measures of America and her allies. Mr. Dean does not give many details of these. They were presumably outside his brief as Chairman of the A.E.C. It is therefore necessary to consult other and possibly less reliable sources. Among the embarrassingly large number of articles in the American press one has to choose by internal evidence of reliability. Of special interest are a series in *Fortune* during 1953 by Charles J. V. Murphy and another series by I. and S. Alsop in *The New York Herald Tribune*. These, together with a number of articles in the *American Bulletin of Atomic Scientists* allow one to fill in some of the background.

The essential element in the situation is the far greater development of the offensive power of atomic warfare than of the counter-measures against it. This is partly a matter of technology; that is, the technological problem of producing atomic bombs and their carriers has proved easier than the production of an effective active and passive defence system. However true this is, it is evident that a greatly improved active and passive defence system could exist today if enough of the national resources had been devoted to producing it. Recently two major investigations, under the names Project East River and Project Lincoln, have been made of the feasibility and problems of attaining an adequate defence of the United States against strategic bombing attack. Some of the findings of these investigations have been made public. An important conclusion is that the civil defence problem can only be reduced to manageable proportions if the active defence is able to reduce the number of bombers which find their target to a relatively small number. Very great emphasis is placed on the importance of a long warning time in order to give the population a chance to take advantage of shelters, etc.

Several commentators implore the President to tell the American public the full danger of their situation and urge him to embark on a huge civil defence programme. Actually, the very small appropriations for civil defence are apparently being cut. Clearly the American public in general take relatively little interest in achieving an adequate civil defence programme. Anyway, even if such a defence programme as envisaged in these projects were adopted, it would take many years to complete, and in the intervening period the civil defencelessness would remain—with all its consequences in the international field. Moreover, it is clearly understood by Americans that their European allies, so much more in the danger zone, are even less interested in doing anything serious about civil defence.

As regards active defence, a wealth of important detail about the existing state of American air defence and of the possible improvements have been given in Mr. Murphy's articles in *Fortune*.

> To-day, in the event of a surprise attack on the continental U.S., it is calculated that U.S. interceptors and anti-aircraft artillery could bring down between 15 and 20 per cent. of the bombers—if the bombers came over in daylight. If they came at night, the kill ratio would be a fraction of 1 per cent. The existing continental defence system, though steadily improving, is a jerry-built affair. Its radar coverage is sketchy and the equipment mostly of World War II design. Some sixty battalions of World War II anti-aircraft cannon, only part of them radar-sighted, have been optimistically positioned around major cities.

Mr. Murphy suggests that a kill ratio of up to 50 per cent. may be reached by 1957, but by then the weight of possible Soviet attack will have greatly increased.

> Given enough time and money, a defence system capable of a 90 per cent. kill ratio could probably be built. According to Major General Frederic H. Smith, Jr., a deputy commander of the Air Defence Command and one of the Air Force's most thoughtful officers, the curve of the dollar cost *versus* kill capability rises fairly steadily. "The amount of air defence you get, assuming you choose the right weapons systems at the start, is in direct proportion to what you are prepared to pay for it."
>
> But how much is the U.S. prepared to pay? How much punishment, as an alternative to a colossal continental defence investment, is the nation prepared to risk? The most elaborate defence schemes might cost as much as $100 billion; there are modest ones available—at $50 billion, $40 billion, $30 billion. Would the U.S. be willing to *add* the cost of a superdefence system to present military outlays, or would it want to buy the high kill ratio at the expense of other defence programmes, including the retaliatory power that is represented by the programmes of the Strategic Air Force and the Atomic Energy Commission?
>
> This is a crude argument between Maginot-minded exponents of the defensive and the fire-eating bombardiers who want to stake everything on a frightful counter-blow at Russia, and never mind what is happening to the American civilians.

A closely similar argument has been developed by the Alsop brothers in *The New York Herald Tribune*. They remark: "We have no air defence today. In two years' time we shall be nakedly exposed to air-atomic destruction by the Kremlin." They emphasise that American concentration on atomic striking power has led to air defence being consistently given low priority. We are told by the Alsops that President Eisenhower and the National Security Council in the Spring of 1953 seriously considered recommending an expenditure of well over 20 billion dollars to develop an effective active defence system. This sum would have supplemented the normal Defence budget.

Mr. Murphy gives great prominence to various trends of thought, some sponsored especially by a group of scientists led by Dr. Robert Oppenheimer, as to what ought to be done now that the U.S. is in this "very tough fix." One such trend is that the United States should first develop a more effective air defence as a "disincentive" to a possible Soviet atomic attack, and when this has been done, that the problem of reaching some kind of accommodation with the U.S.S.R. in relation to atomic bombs should be studied. Murphy expresses Oppenheimer's reputed views as follows:—

> *Implicit in his reasoning is the idea that, if the* U.S. Government should show itself ready to modify "the very great rigidity" of its existing atomic strategy, particularly as regards the stockpiling of super-atomic weapons and the building of long-range bombing fleets, the Soviet Union *might* respond by intimating that it was prepared to modify its own forces of the same type. That is, while it might not be possible, at this stage of world conflict, to secure an absolute abolition of atomic armaments, nevertheless there *might* arise a situation in which each of the main adversaries would agree to reduce its stockpile and its long-range striking force to a point where neither need thereafter fear a knockout blow launched in surprise by the other. Such a settlement would be based on a mutual understanding that atomic stockpiles would stop short of catastrophic quantities.

On the whole, Mr. Dean, Mr. Murphy, the Alsop brothers and the group of scientists around Oppenheimer seem to agree on many aspects of the *impasse*.

In the light of this situation, how are we to estimate the significance of the recent announcement by the President and by Mr. Dulles of a change of fundamental strategy? Mr. Dulles said on January 12: "But before military planning could be changed, the President and his advisors, as represented by the National Security Council had to take some basic policy decisions. This has now been done. The basic decision was to depend primarily upon a great capacity to retaliate, instantly, by means and at places of our choosing." This policy is reflected in the new Budget figures, which show a drastic cut in the Army vote but a small increase in those for the Air Force and Atomic Energy. A marked strengthening of the active and passive defence systems of America seems to have been abandoned in favour of strengthening the offensive power.

There is a marked contrast between the apprehensive caution of Mr. Dean and the confidence of Mr. Dulles in the virtues of the big atomic threat. What has happened since last Summer when, according to the evidence provided by Mr. Dean's book, the atmosphere of Washington was different? Has the President decided that, after all, the defencelessness of the American

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population and still more of their allies is of no significance? Has some new technical advance altered the basic situation? Probably the explanation of the change is quite simple. The views that Mr. Dean absorbed and conveyed to the world in his book must have been in the main those of the last months of the Truman regime, when General Bradley, a noted exponent of the balanced-force view of war, was Chief of Staff. When the Eisenhower Government came into effective action, it was pledged by electoral promises to toughness abroad and economy at home. The second pledge led to the rejection of any great strengthening of active or passive defence, and the first to the rejection of any move towards limiting the use of atomic weapons against civilian populations.

In the light of the two pledges, what else could they have done? The lack of any other politically possible action open to the Administration does not, however, imply that the action that was taken has much direct relevance either to the problem of avoiding a major war or of winning it if it came. Still less has it any relation at all to the ending of minor wars such as that in Indo-China. Is it possible that the much advertised New Look of American strategy has something to do with winning the November elections? Evidently the great debate is not over, and the fundamental dilemma of American atomic policy persists and, moreover, is likely to get more acute with time. Assuming the U.S.S.R. does not make a major aggression and that America does not precipitate a preventative war, nor spend huge sums on a defence system, a day will come when the Soviet stockpile will be large enough—to quote Mr. Dean again—"to cancel out the atom as an instrument of war." Perhaps this day has not arrived. Yet, for all their different views, there is one proposition on which probably Mr. Dulles and Mr. Dean may agree: whatever the role of the atom as an instrument of future war, it has already been cancelled out as an instrument of present diplomacy.

P. M. S. BLACKETT

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File w.r.B

D.L.(1) G.F.Bruce/amg

DEPARTMENT OF EXTERNAL AFFAIRS

MEMORANDUM

DOWNGRADED TO SECRET
REDUIT A SECRET

TO: MR. ROGERS

MR. BARTON

FROM: G.F.Bruce.

REFERENCE:

Security TOP SECRET

Date January 13, 1954.

File No. 50219-D-40

SUBJECT: Attendance by Canada at a meeting in Washington to study the effects of atomic explosions.

At his briefing meeting, Tuesday morning, January 12th, General Foulkes reported that a meeting was being held in Washington from February 15 to 19 to discuss the effects of atomic explosions on personnel, structures and equipment. It is being sponsored jointly by the United States Defence Department and the Atomic Energy Commission. It is to be the first in a series of meetings to which representatives from the Canadian Government and the United Kingdom Government will be invited to attend.

2. General Foulkes was under the impression that three days would be under the supervision of the AEC and would deal mainly with the [redacted] effects on persons and structures. The remaining two days would be under the supervision of the Defence Department and would study the effects of atomic explosions on ships, military equipment, aircraft, submarines, etc. General Foulkes concluded, therefore, that roughly two groups of people would be interested in the conference -- the scientists and technical service personnel. The former group, he suggested, would come mainly from DRB; the latter mainly from the ABC school. The General mentioned that he intended to recommend that Dr. Solandt attend. He made it quite clear in addition that he expected a very strong military representation. He understood that the senior U.S. person would be Dr. Schofield and the senior U.K. official would be Dr. Penny.

biological

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3. General Foulkes, in reviewing the attempt over the past several years to obtain such information from the U.S., recalled that he had mentioned the matter during the meeting in Washington with Admiral Radford and the Chiefs of Staff. This meeting, you will recall, was attended by Dr. MacKay and Mr. Heeney.

4. The General also stated that until the nature of the meetings and the representation from the U.S. and the U.K. becomes clear, General Worthington had agreed that civil defence authorities need not be part of the Canadian group. At the present time, Canadian civil defence authorities obtain information from the U.S. civil defence authorities, who in turn, obtain their information from the AEC. It was felt that this arrangement was satisfactory. General Foulkes concluded by emphasizing strongly the absolute necessity of maintaining complete security on these meetings. Since it was the first time that Canada had beenable to get its foot in the door of the U.S. warehouse of atomic information, and since the U.S. authorities had had great difficulty in weaselling around the McMahon Act, [redacted], General Foulkes wished to insure that no breach of security occurred, at least as far as Canada was concerned.

B

G. F. Bruce.

INCOMING MESSAGE
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ORIGINAL

FROM: THE CANADIAN AMBASSADOR TO THE UNITED STATES.

File WWB

TO: THE SECRETARY OF STATE FOR EXTERNAL AFFAIRS, CANADA

Security Classification	
RESTRICTED	
File No.	
50219-D-40	
52	50

Priority	System	No.	Date
	CYPHER-AUTO	WA-2515	November 4, 1953.

Departmental Circulation

MINISTER
UNDER/SEC
D/UNDER/SEC
A/UNDER/SEC'S
POL/CO-ORD'N SECTION
U. N. DIV.

D-1

1 2 3 4 5 6 7 8 9 10 COMMONWEALTH

Done

Date 5 NOV 1953

References

Ref
European Div
American Div
D L
Mr Claxton
CCOS
Sec Cabinet
CDRB
+ File

Reference:

Subject: United States Statements on the Storage of Atomic Bombs in Spain.

At his news conference yesterday Mr. Dulles was asked whether the United States planned to store atomic bombs in Spain, in view of the Madrid story published in yesterday's newspapers attributing statements to the Secretary of the Air Force Talbot and Chief of the Air Staff Twining to the effect that the new Spanish bases would be equipped with atomic weapons. Mr. Dulles replied as follows:

"I assume your question is prompted by some press stories from Madrid. I don't know precisely what was said by Secretary Talbot or General Twining but I can say this: We have no plans for storing atomic weapons in Spain. If and when we have plans for storing atomic weapons, we shall not announce them publicly to the world and to our potential enemy".

2. Later in the day Secretary of Defense Wilson stated that he was "completely in line" with the Secretary of State's denial that the United States has plans to stockpile atomic weapons in Spain. He also said that the Secretary of the Air had not cleared any statement with him.

3. Reston's article in today's New York Times provides interesting background information to these two statements, indicating that the President himself had intervened and asked the two secretaries to co-ordinate any public remarks on such subjects and to see that their subordinates did likewise.

Done BB

Date Nov. 6, 1953

Ext. 230 (rev. 3/52)
53 P. 170

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INCOMING MESSAGE

File WMB ORIGINAL

50219-40

FROM: THE CANADIAN AMBASSADOR TO THE UNITED STATES

533.

TO: THE SECRETARY OF STATE FOR EXTERNAL AFFAIRS, CANADA

Security Classification: UNCLASSIFIED

File No. 50219-D-40

59 | 50

Priority	System	No.	Date
IMPORTANT	EN CLAIR	WA-2223	September 30, 1953.

Departmental Circulation
MINISTER
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D/UNDER/SEC
A/UNDER/SEC'S
POL/CO-ORD'N SECTION

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DONE-COMM'S SECTION
Done
Date OCT 0 1 53
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Min. of N.D.
D/M N.D.
CCOS(2)
Sec. Cab.
D/M Finance
D/M Def. Prod.
Chairman DRB
PJBD(4)
Amer. Div.
Econ. Div.
DL(2)
Canad. Paris
Can. House

Done
Date 1/10/53

Reference:

Subject:

Following is a transcript of the President's remarks on the subject of the H-Bomb at his press conference to-day. This transcript was made available to us on the understanding that it has not (repeat not) been cleared by the President's office and that we will not (repeat not) use it to quote the President direct:

Text begins:

Question:-- (Will) this country's awareness of the Russians' ability to manufacture the H-Bomb have any effect on his plans for the nation's defenses?

Answer: We are, quite naturally. This is a material and physical fact of the utmost importance to the world. Particularly, it makes us more interested than ever in determining just what are the intentions of the USSR and their associated countries honestly attempting to reach some kind of negotiated situation with the United States in which all of us can have confidence. Now the knowledge that they have this bomb is, of course, an acute one for the Defence Department. I should say that it is a fact that is probably causing each of us more earnest study, you might say almost prayerful study, than any other thing that has occurred lately; and I might say in connection with that, that I do hope when I can get straightened out in my own mind and with my advisers exactly how we should approach this whole subject in the inter-related subject of the international situation, the relief of tensions in the world and this growing distructiveness of the world's armaments. When I can get that all straightened, I expect to go before the United States and tell them (to be very frank in telling) the facts on which my studies have been based and the conclusions that the administration and I have reached. Just when this can be done I am not prepared to say because it is very, very intricate and any attempt to do this is very apt to react in a number of ways. But we have friends abroad. We must be very careful that they understand always. We have one intention in the world-peace. We

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National Research Council
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Press Office
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don't want any harm and anyone who has had certainly the kind of experience with war that I have can say this with such passion, almost, as to put war at the very last of any possible solutions to the world's difficulties. I believe we have gone far enough in this. You could say that the only possible tragedy greater than winning a war would be losing it. Just war is-should be-out from the calculations of all of us and we should proceed from there.

Now, we want all of our friends to understand this thoroughly but we have to talk from positions of strength because we have to take rudimentary precautions for our own security. We will not quail from any sacrifice necessary to provide that security. If you don't look out these intentions are misunderstood, and badly misunderstood. They say we are-we are pugnacious or we are impulsive or we have lost our faith in the conference table. Now those things are far from the truth. They are the contrary to the truth and so we must be very careful. Another thing is, you don't want to frighten anyone to death in this world. As I have said to you before, frightened people cannot make good decisions. So you have to understand our own strength, a strong free world, a strong America, at the very same time that you are weighing also our dangers and our risks. So, after this very round-about way of answering your question, the fact is that anyone would be foolish to try to shut our eyes to the significance of the event of which you speak.

Text ends.

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