



INFORMATION DIVISION
DEPARTMENT OF EXTERNAL AFFAIRS
OTTAWA - CANADA

No. 52

THREE POWER CO-OPERATION ON ATOMIC ENERGY

Reference and background material based on statements, speeches and reports relative to Anglo-American-Canadian co-operation in the field of atomic energy.

REFERENCE PAPERS

INFORMATION DIVISION
DEPARTMENT OF EXTERNAL AFFAIRS
OTTAWA, CANADA

GOVERNMENT OF CANADA

THE STATE OF ONTARIO

Reference and background material based on
several sources and reports relative
to high-energy physics cooperation in
the field of atomic energy.

CONTENTS

	<u>PAGE</u>
I. WARTIME CO-OPERATION.	
A. Statements Following Dropping of First Atomic Bomb.....	1
B. American, British and Canadian Reports on Participation in the Atomic Project.....	3
C. Testimony of Dr. Robert F. Bacher before the Joint Committee on Atomic Energy, July 6, 1949, re British and Canadian Wartime Contributions to the Atomic Bomb Project.....	5
II. AMERICAN, BRITISH AND CANADIAN PROPOSAL FOR INTERNATIONAL CONTROL OF ATOMIC ENERGY.	
A. Early Statements.....	6
B. Agreed Declaration by President Truman and Prime Ministers Attlee of Great Britain and Mackenzie King of Canada re International Control, Washington, November 15, 1945.....	7
C. References to the Agreed Declaration.....	7
III. POSTWAR AMERICAN, BRITISH AND CANADIAN RELATIONS UP TO THE BLAIR HOUSE CONFERENCE.	
A. Relation of United States to the United Kingdom and Canada with Reference to the Monopoly of the Atomic Bomb Described in a Report on the International Control of Atomic Energy (Acheson-Lillienthal Report).....	8
B. Fields of Co-operation.....	8
IV. DEVELOPMENTS SUBSEQUENT TO BLAIR HOUSE CONFERENCE ON JULY 14, 1949 HELD TO CONSIDER PROBLEMS ARISING OUT OF AMERICAN, BRITISH AND CANADIAN RELATIONS IN THE ATOMIC ENERGY FIELD.	
A. Senator McMahon's Announcement of July 19 re Meeting on Following Day of Joint Committee on Atomic Energy to Discuss Subject of Blair House Conference.....	10
B. Senator McMahon's Statement on Outcome of Meeting on July 27 of Joint Committee with Secretary of State, Secretary of Defence and the Atomic Energy Commission.....	10
C. President's Truman's Statement of July 28, 1949 Announcing Forthcoming Exploratory Talks with British and Canadians.....	11
D. Announcement of American, British and Canadian Conference on Reactor Safeguards.....	12
E. Announcement of American, British and Canadian Conference to Review Uniform Declassification Guide.....	13
V. INDICATIONS OF PROGRESS OF CANADIAN ATOMIC ENERGY PROGRAMME	
A. Postwar position of Canada.....	14
B. Canadian Reactors.....	14
C. Radioisotopes for Industrial Research.....	15
D. Progress 1948-49 from Third Annual Report of Atomic Energy Control Board.....	15
VI. INDICATIONS OF PROGRESS OF BRITISH ATOMIC ENERGY PROGRAMME	
A. British Summary of Progress Made.....	16
B. Excerpts from British Statements Regarding the Atomic Energy Programme.....	17

1. The Commission on the Status of Women was established in 1960 to study the position of women in Canada and to make recommendations to the Government.

II. THE COMMISSION'S REPORT AND RECOMMENDATIONS

2. The Commission's report, published in 1961, contains a number of recommendations for the improvement of the status of women in Canada.

III. THE STATUS OF WOMEN IN CANADA

3. The Commission's report states that the status of women in Canada has improved since 1945, but that there is still a long way to go.

IV. THE STATUS OF WOMEN IN THE WORLD

4. The Commission's report also discusses the status of women in other countries and compares it with the status of women in Canada.

V. THE STATUS OF WOMEN IN THE FUTURE

5. The Commission's report concludes that the status of women in Canada will continue to improve in the future.

VI. THE STATUS OF WOMEN IN THE FUTURE

6. The Commission's report concludes that the status of women in Canada will continue to improve in the future.

I. WARTIME CO-OPERATION.

A. Statements following dropping of First Atomic Bomb.

1. President Truman's Announcement of August 6, 1945. (Appendix No. 1, Page 95 of The International Control of Atomic Energy--Growth of a Policy - Department of State, Publication 2702, U.S. Government Printing Office).

"Sixteen hours ago an American airplane dropped one bomb on Hiroshima, an important Japanese Army base...."

"It is an atomic bomb...."

"Beginning in 1940, before Pearl Harbor, scientific knowledge useful in war was pooled between the United States and Great Britain, and many priceless helps to our victories have come from that arrangement. Under that general policy the research on the atomic bomb was begun. With American and British scientists working together we entered the race of discovery against the Germans..."

The Secretary of War, who kept in personal touch with all phases of the project, will immediately make public a statement giving further details.

2. Secretary of War Stimson's Statement of August 6, 1945. (Appendix No. 2, Growth of a Policy).

a) Early Anglo-American Co-operation, (Page 99).

"A large number of American scientists were pressing forward the boundaries of scientific knowledge in this fertile new field at the time when American science was mobilized for war. Work on atomic fission was also in progress in the United Kingdom when the war began in Europe. A close connection was maintained between the British investigations and the work here, with a pooling of information on this as on other matters of scientific research of importance for military purposes. It was later agreed between President Roosevelt and Prime Minister Churchill that the project would be most quickly and effectively brought to fruition if all effort were concentrated in the United States, thus ensuring intimate collaboration and also avoiding duplication. As a consequence of this decision, a number of British scientists who had been working on this problem were transferred here in late 1943, and they have from that time participated in the development of the project in the United States..."

b) Organization of Combined Policy Committee (p.103)

"In order to bring the project to fruition as quickly as possible, it was decided in August 1943 to establish a Combined Policy Committee with the following membership: Secretary of War Henry L. Stimson, Dr. Vannevar Bush and Dr. James B. Conant, for the United States; Field Marshal Sir John Dill and Colonel J.J. Llewellyn, for the United Kingdom; and C.D. Howe, for Canada. The Committee is responsible for the broad direction of the project as between the countries. Interchange of information has been provided for within certain limits. In the field of scientific research and development full interchange is maintained

between those working in the same sections of the field; in matters of design, construction and operation of large scale plants information is exchanged only when such exchange will hasten the completion of weapons for use in the present war. All these arrangements are subject to the approval of the Combined Policy Committee. The United States members have had as their scientific adviser Dr. Richard C. Tolman; the British members, Sir James Chadwick; and the Canadian members, Dean C. J. Mackenzie."

c) Joint Patent Control, (Page 103)

"It was early recognized that in order to make certain that this tremendous weapon would not fall into the hands of the enemy prompt action should be taken to control patents in the field and to secure control over the ore which is indispensable to the process. Substantial patent control has been accomplished in the United States, the United Kingdom, and Canada..."

3. Mr. Winston Churchill's Statement Released by British Prime Minister Attlee of August 6, 1945 (Statements Relating to the Atom Bomb, His Majesty's Stationery Office, London, 1945).

President Roosevelt Proposes Co-operation and the Results Thereof (Pages 4-5)

"On October 11, 1941, President Roosevelt sent me a letter suggesting that any extended efforts on this important matter (atomic research) might usefully be co-ordinated or even jointly conducted. Accordingly all British and American efforts were joined and a number of British scientists concerned proceeded to the United States....

"The Canadian Government, whose contribution was most valuable, provided both indispensable raw material for the project as a whole and also necessary facilities for the work of one section of the project which has been carried out in Canada by the three Governments in partnership.

"The smoothness with which the arrangements for co-operation which were made in 1943 have been carried into effect is a happy augury for our future relations and reflects great credit on all concerned -- on the members of the Combined Policy Committee which we set up; on the enthusiasm with which our scientists and technicians gave of their best --...; and not least, on the generous spirit with which the whole United States organization welcomed our men and made it possible for them to make their contribution..."

4. Statement of Mr. C.D. Howe, Canadian Minister of Munitions and Supply and Reconstruction, August 13, 1945, Prefacing the Canadian Information Service Statement on the Atomic Bomb (Published as Appendix 8 of Atomic Energy for Military Purposes (Smyth Report) by H.D. Smyth, Princeton University Press, 1946).

Canada and the Atomic Project, (Page 288)

"Inquiries received from all parts of the world indicate the widespread interest in the work carried on in Canada in making possible the production of the atomic bomb...

"The dropping of the first atomic bomb is, however, the culmination of the work of scientists from many nations, the pooling of the scientific and natural resources of the United States, Britain and Canada and the expenditure of hundreds of millions of dollars in the United States and smaller, but substantial, sums in Canada on plant and equipment in the most extensive scientific effort ever directed towards the attainment of a new weapon.

"Having ample supplies of basic materials, good water supplies, and isolated sites well suited to the work, Canada, with foresight and enterprise and the organization of the National Research Council, has been able to enter as a pioneer into an important new field of technology."

5. Statement of Canadian Prime Minister Mackenzie King in House of Commons Debate, December 17, 1945 (Taken from U.S. Congressional Hearings on Atomic Energy Act of 1946, Part I, page 10).

Canadian Membership in the Combined Policy Committee and Canada's Raw Material Contribution.

"Upon invitation of Mr. Roosevelt and Mr. Churchill, in which I had concurred, Mr. Howe, the Minister of Munitions and Supply, was made a member of the Combined Policy Committee as the representative of Canada...

"As soon as the significant use of uranium in the atom bomb process was disclosed to Mr. Howe and myself, we secured the approval of the cabinet of the purchase of the Eldorado uranium properties in the Great Bear Lake area... This was a strategic factor of high importance, since this second largest known source of raw material thereby became accessible to the large manufacturing plants already built in the United States.

B. American, British and Canadian Reports on Participation in the Atomic Project.

1. Atomic Energy for Military Purposes (Smyth Report), August 12, 1945. (Princeton University Press, 1946 Edition).

a) Early American-British Exchanges.

"Before the National Academy issued its third report and before Pegram and Urey (American nuclear physicists) visited England, Bush had taken up the whole uranium question with President Roosevelt and Vice-President Wallace. He summarized for the British views, which were on the whole optimistic, and pointed out the uncertainties of the predictions. The President agreed that it was desirable to broaden the programme, ... and to effect complete interchange of information with the British... (page 53)

"...In September 1941, it was decided that Pegram and Urey should get first-hand information by a trip to England. They completed their trip in the first week of December 1941...

"...Actually the principal importance of this visit and other interchanges during the summer of 1941 lay not in accurate scientific data but in the general scientific impressions... They (the British) feared that if the Germans got atomic bombs before the Allies did, the war might be over in a few weeks. The sense of urgency which Pegram and Urey brought back with them was of great importance. (pages 70-71).

b) British Contributions.

"Reports received from the British, and the visit by the British group in the winter of 1941-1942, clarified a number of points. At that time the British were planning a diffusion separation plant themselves so that the discussions with F. Simon, H. Peierls, and others were particularly valuable. (Page 173)

(Work on the Atomic Bomb)... "J. Chadwick of England and N. Bohr of Denmark spent a great deal of time at Los Alamos and gave invaluable advice. Chadwick was the head of a British delegation which contributed materially to the success of the laboratory." (page 214)

2. British Information Service Statement, "Britain and the Atomic Bomb", August 12, 1945 (Published as Appendix 7 of the Smyth Report, Princeton University Press, 1946 Edition).

Concentration of British Efforts in the United States,
(Pages 285-287).

"In August 1943 Sir John Anderson visited America and discussed with the U.S. authorities the means by which the co-operation between the two countries might best be placed upon a more formal basis. Further discussions took place subsequently between President Roosevelt and Mr. Churchill which led to the setting up of the Combined Policy Committee in Washington...

"As a result of these discussions it was decided to move to America a large number of the scientists working in England on T.A. (Tube Alloys, British wartime code word for the atomic project) in order that they might work in the appropriate American groups.

"At this time Professor Bohr escaped from Denmark and the British Government appointed him as an adviser on scientific matters. This scientific advice on the T.A. project has been available both in the U.K. and in the U.S. to the two Governments...

"The effect of these transfers and others which were made to the Montreal project was to close down entirely all work in the U.K. on the electromagnetic process and to reduce almost to nothing the nuclear physical research.

"Nevertheless there is no doubt that this was the proper course to follow in the light of the decision which had been taken to give the highest priority to the

production, in the shortest possible time, of an atomic bomb for use in this war."

3. Canadian Information Service Statement, August 15, 1945 (Published as Appendix 8 of Smyth Report).

Canadian Heavy Water Pile, (Page 289)

"As a result of agreements reached between the three partner governments, the work of this laboratory (Canadian National Research Council Laboratory at Montreal) was closely co-ordinated with the tremendous research activity in this field in the United States. Its work led to the design of a (heavy water) pilot plant for the production of atomic bomb materials, now under construction at Petawawa (Chalk River) Ontario, by Defence Industries Limited, as a part of the combined United Kingdom-United States-Canadian programme.

"The primary material required for the operation of this plant and for its production of materials for atomic bombs is uranium. One of the world's most important deposits of this substance was discovered near Great Bear Lake in Canada."

C. Testimony of Dr. Robert F. Bacher, former Los Alamos Scientist and AEC Commissioner, before the Joint Congressional Committee on Atomic Energy, July 6, 1949, re British and Canadian Wartime Contributions to the Atomic Bomb Project.

MR. JACKSON. Doctor, you worked with some of the British and Canadian scientists during the war?

DR. BACHER. I did.

MR. JACKSON. I wonder if you would be good enough to comment on our policy in connection with the British and the Canadians very briefly and whether you think it has been properly handled.

DR. BACHER. Just to make a few remarks on this, Mr. Jackson, the co-operation with the British and Canadians during the war was quite complete. It did not cover all parts of the project, but many parts of the project it covered with considerable thoroughness.

For example, with reference to the heart of the project, the laboratory at Los Alamos, the first discussions with the British were undertaken, if I recall correctly, in August of 1943. Subsequently, a sizable British mission came to Los Alamos, headed by Sir James Chadwick and composed of a number of eminent British scientists.

These men worked in many parts of the project. Several of them were in the Theoretical Division there and contributed ideas to the development of the bomb which were very important. As members of the Theoretical Division, of course, they had quite general access to work that was going on in the rest of the project and they had access to the work in experimental physics, in experimental chemistry, to the general metallurgical work that was going on there, to the ordnance development work, and to the bomb physics work. In fact, they had general access to all of the information that was developed at Los Alamos.

Many of them were in these various sections of the laboratory at Los Alamos and participated in that work. One of them was a very close associate of mine in the Bomb Physics Division and was responsible for and participated in many of the critical assemblies of vital materials which were made in the development of the bomb. So they had a thorough and complete knowledge of all the bomb work.

On other parts of the project I cannot speak from quite such close association, but I know that, likewise, they were associated intimately with the development of the electromagnetic process of separation, with the diffusion process in its early days. The Canadians in particular were closely associated with the development of the piles at the metallurgical laboratory at Chicago. The extent of the knowledge which was exchanged during that period of co-operation between the British and Canadians with the United States was very deep.

MR. JACKSON. What has their participation been since that time?

DR. BACHER. Their participation in 1946, of course, with the passage of the Atomic Energy Act, was cut to zero; and there has been no participation by them directly in the United States atomic energy project since then. There have, as you know, been established, certain areas of technical co-operation which have been spelled out in considerable detail in papers that have been furnished to the Joint Congressional Committee. There are, I believe, nine areas, some classified, some unclassified.

MR. JACKSON. Do you feel that their participation assisted materially in the work that you were engaged in at the time at Los Alamos?

DR. BACHER. There is no question of that, Mr. Jackson.

II. AMERICAN, BRITISH AND CANADIAN PROPOSAL FOR INTERNATIONAL CONTROL OF ATOMIC ENERGY.

A. Early Statements.

1. President Truman's Assurance Bomb Secrets Will Not Be Released to Lawless World (Address to the Nation on the Berlin Conference, August 9, 1945, Appendix No. 3, Growth of a Policy, Pages 107-108).

"...The atomic bomb is too dangerous to be loose in a lawless world. That is why Great Britain and the United States, who have the secret of its production, do not intend to reveal the secret until means have been found to control the bomb so as to protect ourselves and the rest of the world from the danger of total destruction..."

(The President expressed a similar opinion in his press conference at Reeltop Lake, Tennessee, on October 9, 1945.)

2. President Truman's Announcement Re Proposed Discussions with British and Canadians on International Control of Atomic Energy (from President's message to Congress of October 3, 1945 Requesting Passage of Atomic Legislation, Appendix No. 4 to Growth of a Policy, page 112).

"...Discussion of the International problem cannot be safely delayed until the United Nations Organization is functioning and in a position adequately to deal with it.

"I, therefore, propose to initiate discussions first with our associates in this discovery, Great Britain and Canada, and then with other nations, in an effort to effect agreement on the conditions under which co-operation might replace rivalry in the field of atomic power.

"I desire to emphasize that these discussions will not be concerned with disclosures relating to the manufacturing processes leading to the production of the atomic bomb itself. They will constitute an effort to work out arrangements covering the terms under which international collaboration and exchange of scientific information might safely proceed...

(The President made a similar statement in his Navy Day Address, October 27, 1945, Appendix No. 5 to Growth of a Policy, page 117.)

B. Agreed Declaration by President Truman and Prime Ministers Attlee of Great Britain and Mackenzie King of Canada re International Control, Washington, November 15, 1945 (Appendix No. 6 to "Growth of a Policy").

1. Willingness to Contribute (page 119).

"...Representing as we do, the three countries which possess the knowledge essential to the use of atomic energy, we declare at the outset our willingness, as a first contribution, to proceed with the exchange of fundamental scientific literature for peaceful ends with any nation that will fully reciprocate...

2. Withholding Atomic Bomb Information (page 119).

"We are not convinced that the spreading of the specialized information regarding the practical application of atomic energy, before it is possible to devise effective, reciprocal, and enforceable safeguards acceptable to all nations, would contribute to a constructive solution of the problem of the atomic bomb. On the contrary we think it might have the opposite effect. We are, however, prepared to share, on a reciprocal basis with others of the United Nations detailed information concerning the practical industrial application of atomic energy just as soon as effective enforceable safeguards against its use for destructive purposes can be devised..."

C. References to the Agreed Declaration.

1. Address of Secretary of State James Byrnes at Charleston, South Carolina, November 16, 1945 (Appendix No. 7 to Growth of a Policy, page 121).

"...Accordingly, the President of the United States and the Prime Ministers of Great Britain and Canada-- the partners in the historic scientific and engineering undertaking that resulted in the release of atomic energy-- have taken the first step in an effort to rescue the world from a desperate armament race..."

2. Address of Senator Tom Connally to Committee One of the U.N. General Assembly, January 21, 1946.

"...The combined efforts of the United States, Great Britain and Canada during the war resulted in great scientific discoveries in the field of atomic energy. The world importance of the problems presented by these discoveries was the subject of a declaration made by the heads of governments of those three states at Washington on November 15, 1945..."

3. Statement of Canadian Prime Minister Mackenzie King in House of Commons Debate, December 17, 1945.

...We are prepared to concede that the progress our three countries had made in the development and use of atomic energy demanded that our countries take the initiative in an international effort to prevent the further use of atomic energy for destructive purposes. We felt an equal obligation on the part of our countries to promote the use of recent and further exchanges of scientific knowledge, particularly in the utilization of atomic energy for peaceful and humanitarian ends...

III. POSTWAR AMERICAN BRITISH AND CANADIAN RELATIONS UP TO THE BLAIR HOUSE CONFERENCE.

A. Relation of the United States to the United Kingdom and Canada With Reference to the Monopoly of the Atomic Bomb Described in Report on the International Control of Atomic Energy, March 16, 1946 (Acheson-Lilienthal Report -- Department of State Publication 2498, U.S. Government Printing Office, Page 53).

"It is true that some part of our monopoly we hold in common with the United Kingdom and Canada. This applies principally not to material facilities or to weapons, but to the availability of raw materials, to theoretical knowledge, and to some elements of the know-how."

B. Fields of Co-operation.

1. Declassification.

a) Declassification Conference Held in the United States in November 1947 (see Third Semi-Annual Report of the U.S. Atomic Energy Commission, February 2, 1948, Senate Document No. 118, 80th Congress, U.S. Government Printing Office, page 25).

"In order to insure uniform application of declassification policies with respect to information shared by the United Kingdom, Canada, and the United States, as a result of their combined wartime efforts, and in the interests of maintaining maximum security of information, the Commission arranged a three-day conference between representatives of the atomic energy agencies of the three nations in November 1947... Discussions were limited to technical data held jointly by the participating nations as a result of their co-operation during the war. Canada and the United Kingdom now use the Declassification Guide developed in the United States and made available to them in April of 1946."

b) Declassification Conference Held in the United Kingdom in September 1948 (see AEC Press Release No. 125, August 31, 1948).

"Washington, August 31 -- In the interest of continued uniform application of measures for security of atomic energy information, representatives of the atomic energy agencies of Canada, the United Kingdom, and the United States will hold their second meeting September 6-8 at the British Atomic Energy Research Establishment, Harwell, Didcot, Berks, England.

"The three nations now use uniform Declassification Guides in determining what information arising from their atomic energy research and developmental work may be published and what information is to be classified and restricted in circulation. These guides were developed at the first meeting of the representatives of the three governments November 14-16, 1947, in Washington, D.C.

"At the forthcoming second meeting, the Guides will be reviewed in the light of technical developments of the past ten months. The purpose of the review is to assist in maintaining maximum security of information shared by the participating nations." (For announcement of 1949 conference, see Section IV, E of this release.)

2. Technical Exchanges.

Statement of the Chairman of the U.S. Atomic Energy Commission, Mr. Lilienthal, re Status of Technical Co-operation Since Passage of AEC Act (see Address of AEC Chairman Lilienthal of August 21, 1948 at opening of Atomic Energy Exhibit of Golden Jubilee Exposition, New York City).

"...In the summer of 1946, Congress passed the Atomic Energy Act which established the United States Atomic Energy Commission. Thereupon the wartime co-operation between the three governments quite naturally had to be viewed in the light of the responsibilities thus fixed by Congress upon the new Commission as well as considerations of foreign policy and national defence.

"The wartime experience shared by the three governments provides a convincing demonstration of the mutual benefits to be derived from co-operative effort. Recognizing this, the three governments concerned are continuing to utilize, in an expanded way, the co-operative principle in certain limited areas in which work has been proceeding separately along the same lines in two or more of the three countries. In some of these fields all three nations are represented in consultations on specific topics concerning atomic energy; at other times, only two of the three are involved.

"This programme of technical co-operation is carried out under the general direction of the Combined Policy Committee which also reviews those problems of raw materials supply common to the three governments.

"The general framework thus provided has been utilized to develop technical consultations on specified topics and to provide for a number of visits by scientists and technicians of each country to the other two. The health

and safety factors in connection with the Canadian atomic installation at Chalk River, Ontario, for example, have been examined in the light of the technical experience of the United Kingdom and the United States. The United States is concerned with the development of reactors which constitute a unique tool in nuclear research. The United States, as well as Canada and the United Kingdom, can share some of this experience in connection with reactors to achieve mutual benefit to all three governments. Experience and knowledge in the important field of extraction chemistry acquired by the United States and the United Kingdom can be of mutual benefit to the activity of each nation in this area."

IV. DEVELOPMENTS SUBSEQUENT TO BLAIR HOUSE CONFERENCE ON JULY 14, 1949 HELD TO CONSIDER PROBLEMS ARISING OUT OF AMERICAN, BRITISH AND CANADIAN RELATIONS IN THE ATOMIC FIELD.

A. Senator McMahon's Announcement of July 19, 1949 of Meeting on July 20 of the Joint Congressional Committee on Atomic Energy to Discuss Subject of Blair House Conference.

"Following on the meeting at Blair House, at which Congressional leaders (including ranking members of the Committee) were present, the Joint Committee on Atomic Energy plans to meet in closed session on Wednesday, July 20, at 2:30 p.m., to explore with the Department of State, the National Military Establishment and the Atomic Energy Commission the continuing problem of our relations with the United Kingdom and Canada in the field of atomic energy. At the present time, the three countries are co-operating in a limited number of specifically defined areas of information, as well as on matters of raw materials supply.

"At the meeting Wednesday, the Committee will discuss with the three agencies most directly concerned the problems which lie ahead in our relations with the United Kingdom and Canada in this field."

B. Senator McMahon's Statement on Outcome of Meeting on July 27, 1949 of the Joint Committee with the Secretary of State, Secretary of Defence and the Atomic Energy Commission.

Recommendation for Maintenance of the Status Quo and Exploratory Talks with the British and Canadians.

"The Joint Committee on Atomic Energy met today with Secretary of State Acheson, Secretary of Defence Johnson, and the Atomic Energy Commission, and again discussed foreign relations in the field of atomic energy.

"Mr. Acheson explained that he and Mr. Johnson and the Commission had carefully reviewed the problems involved and had consulted with President Truman. The President feels, according to Mr. Acheson, that any action on questions such as these -- which vitally affect national security -- must have the support of both the Executive and Legislative branches of government."

"The Secretary of State, acting on instructions from the President, outlined a plan for maintaining the status quo, and also for conducting exploratory discussions with the British and Canadians. In this way, Mr. Acheson pointed out, time would be gained in which the Executive and Legislative branches of the Government might consult with each other. Moreover, talks between the United States, Britain, and Canada would acquaint each with the others' viewpoint and thus permit all concerned to proceed with added perspective. As had been explained to the Committee previously, no agreements would be concluded and no change whatsoever in existing arrangements would be made until the results of the talks had been made known to and discussed with the Joint Committee. At that time it could be determined what Congressional action is needed."

C. President Truman's Statement of July 28, 1949 Announcing Forthcoming Exploratory Talks with British and Canadians.

1. Blair House Conference.

"On July 14 I consulted with a group of Congressional leaders, including ranking members of the Joint Committee on Atomic Energy, concerning certain problems which this country faces in the field of atomic energy. Since that time members of the administration have held discussions with Congressional leaders, particularly with the Joint Committee on Atomic Energy. Further discussions will take place, as it is essential that action in this field which so vitally affects the security of the country be based on a wide area of agreement between the Executive and Legislative branches of the Government.

"In this field it is important that the people of the country be kept informed to the greatest extent consistent with the requirements of national security, and in a manner consistent with the orderly processes of consultation between the Legislative and Executive branches of the Government. I feel I can now mention briefly some of the factors involved in the problem."

2. Review of War Time Co-operation.

"As a result of consultation among American, British and Canadian scientists beginning in 1939, the United States, the United Kingdom and Canada agreed in 1943 to concentrate a major effort in the United States for the purpose of producing an atomic bomb at the earliest possible time. A British scientific mission participated extensively in the research and development and later in the production of atomic bombs at Los Alamos. They participated in the preparation for, and the evaluation of, the Bikini tests. Similar scientific missions were assigned to research and development work concerned with the construction and operation of the principal plants for the separation of U-235 at Oak Ridge. British and Canadian scientists consulted our scientific and technical personnel at the Metallurgical Laboratory in Chicago on the design of the heavy water reactor which they subsequently built at Chalk River, Canada.

"Early in 1947 the three countries adopted a uniform system for handling the information which had been jointly developed and for determining what should be kept secret and what was appropriate for public release."

3. Modus Vivendi of 1948.

"In January, 1948 the three governments agreed upon a modus vivendi which provided for co-operation among the three countries involving exchange of scientific and technical information in certain defined areas and collaboration on matters of raw material supply of common concern. These arrangements were made after consultation with the Joint Committee on Atomic Energy. These arrangements are limited in scope and duration. It is necessary to consider the future, taking into account the developments made in this field by the three countries, and to maintain the status quo while this consideration takes place."

4. Exploratory Talks with British and Canadians.

"We, therefore, intend to explore with the United Kingdom and Canada some of the basic questions underlying any determination of long-range policy in this field. These are questions which will require further consultations with the Congress following the exploratory conversations. I wish to emphasize that these exploratory conversations do not involve making agreements with, or commitments to, the British and Canadians on these questions. They involve having talks with the British and Canadians prior to further consultations with the Congress. In those consultations with the Congress, we shall have to decide together what course of action it is wisest to take."

D. Announcement of American, British and Canadian Conference on Reactor Safeguards (See AEC Press Release No. 200 of August 31, 1949)

1. Purpose of Conference.

"The Reactor Safeguard Committee of the Atomic Energy Commission will represent the United States at a three-nation conference on reactor safeguards and related subjects to be held in the United Kingdom from September 5 to September 10, 1949. The conference will include classified discussions and inspections under the existing Technical Co-operation Programme of the United States, United Kingdom and Canada, which was established early in 1948 and does not include weapons information.

"Evaluation of the potential hazards of reactors is one of the primary considerations in the location and design of reactors, and each of the three nations has carried on extensive research into various phases of the problem. Among the topics to be discussed will be environmental and meteorological studies connected with the treatment of radioactive wastes, studies of biological tolerances to radiation of plants, animals, and human beings, and the significance to reactor hazards of malfunction of reactor structure or controls, accidental error of operations, sabotage and other action..."

2. Information on Technical Co-operation Programme.

"The Technical Co-operation Programme is carried out under the general direction of the Combined Policy Committee, which also reviews those problems of raw-materials supply common to the Governments of the United States, United Kingdom, and Canada. The Combined Policy

Committee was established early in the period of wartime development in August 1943, by the three Governments to provide broad direction to the atomic project as between the countries.

Members of the Combined Policy Committee are:

For the United States

Dean G. Acheson, Secretary of State
Louis Johnson, Secretary of Defense
David E. Lilienthal, Chairman, Atomic Energy Commission.

For the United Kingdom

Sir Oliver S. Franks, Ambassador from the United Kingdom
Sir Frederick K. Hoyer Millar, Minister of the British Ministry

For Canada

C.D. Howe, Minister of Trade and Commerce

"With the passage of the Atomic Energy Act of 1946, the wartime co-operation between the three Governments had to be adapted not only to considerations of foreign policy and national defense but also in the light of the responsibilities fixed by Congress upon the Commission.

"As was stated by the President in his public statement of July 28, 1949, 'In January 1948 the three Governments agreed upon a modus vivendi which provided for co-operation among the three countries involving exchange of scientific and technical information in certain defined areas and collaboration on matters of raw material supply of common concern.'

"The general framework thus provided has been utilized to develop technical consultations on certain specified topics, which have from time to time included visits by scientists and technicians of each country to the other two."

E. Announcement of American, British, and Canadian Conference to Review Uniform Declassification in Guide (See AEC Press Release No. 202, September 12, 1949).

Washington, September 12 -- "It was announced in Ottawa, London, and Washington today that in the interest of continued uniform application of measures for security of the atomic energy information which they hold in common, representatives of the atomic energy agencies of Canada, the United Kingdom, and the United States will hold their third declassification meeting September 26-28 at the Canadian Atomic Energy Research Establishment at Chalk River, Ontario, Canada.

"The three nations now use uniform Declassification Guides in determining what information arising from their atomic energy research and developmental work may be published and what information is to be kept classified and restricted in circulation. The uniform guides were developed at the first Declassification meeting of the representatives of the three Governments in November 1947,

at Washington, D.C., and were revised at a second meeting held at Harwell, England, in September 1948."

"At the forthcoming third meeting, the Guides will be reviewed in the light of technical developments of the past 12 months. The purpose of the review is to assist in maintaining maximum security of the information held in common by the participating nations..."

V. INDICATIONS OF PROGRESS OF CANADIAN ATOMIC ENERGY PROGRAMME.

A. Post-War Position of Canada

1. Address by Gen. A. G. L. McNaughton, then President, Atomic Energy Control Board, at meeting of Engineering Institute of Canada, May 8, 1947:

"As a consequence of our war effort in the field of atomic energy, Canada attained a position in development which, while not of the same order of magnitude as that of the United States, was nevertheless second only to that country. Canada has considerable reserves of uranium. She has a staff of scientists who have wide experience in carrying out nuclear research."

2. Montreal GAZETTE, September 5, 1947:

"Existence in Canada of the world's largest heavy water atomic plant and the discovery in the Canadian northlands of new uranium deposits were disclosed yesterday by Reconstruction Minister Howe at a press conference.

"He declined to say where the new uranium deposits are or to estimate their size but said that Belgian Congo is still the world's largest supplier of the element, with Canada still second as a source of supply."

3. Article entitled "Potential Resources of Uranium" by Mr. G.C. Bateman, member, Atomic Energy Control Board, in THE NORTHERN MINER, 25 November, 1948:

"We are one of the very few suppliers of raw materials on any important scale and Canada, and Northwest Canada in particular, is one of the most promising fields for new discoveries."

B. Canadian Reactors

1. Radio address by Dr. C. J. Mackenzie, President, National Research Council, in C.B.C. Atomic Energy Series broadcasts, Spring, 1947:

"By September 1945 a small low-power atomic energy pile was in operation at Chalk River. This was the first pile outside of the United States to produce energy by nuclear fission. This pilot plant provided the means of gaining much experience and enabled the scientists to obtain important and valuable data which has been recorded in hundreds of secret reports and papers. Now a large pile (NRX pile) capable of producing thousands of kilowatts of energy has been constructed. Full scale chemical separation plants, laboratories for chemical, nuclear and technical physics research as well as medical and biological research have been erected."

2. Address on the "Design of the Main Chalk River Reactor" by C.H. Jackson, Chief Engineer, Defence Industries Limited, at meeting of Engineering Institute of Canada, May 8, 1947:

"The (main) Chalk River pile (the NRX pile) is an original design. While certain basic nuclear physical data was pooled by Canada, Great Britain and the United States, only a very limited amount of data on a different type of pile from that at Chalk River was available to Canada. To all intents and purposes the complete design of the Chalk River plant, except for the basic nuclear physical data, was originated and developed and the plant was brought into being by the efforts of Canadian and British engineers."

3. Press release on the "Operation of Main Chalk River Pile" by Right Hon. C.D. Howe, Minister of Reconstruction and Supply September 3, 1947.

"The main atomic energy pile at Chalk River has now been in operation for some time and selected radioisotopes have been produced and will be available to qualified research workers in Canada immediately. It is proposed to expand production in this field and to increase the range of isotopes for research purposes."

4. Address on "Importance of Chalk River Reactor" by L.R. Hafstad, Director, Reactor Development, U.S. Atomic Energy Commission, July 22, 1949:

"The Reactor of most advanced design and performance is in Canada."

C. Radioisotopes for Industrial Research: From Ottawa Journal December 8, 1948:

"Trade Minister Howe, Tuesday (December 7) offered industry a year's free use of radioisotopes or tracer atoms from the Chalk River Atomic plant.

"His offer was an effort to spur Canadian industry forward in 'the first great contribution of atomic energy to peacetime purposes'."

D. Progress 1948-49 from the THIRD ANNUAL REPORT of the Atomic Energy Control Board:

"During the past year the performance of the NRX pile at Chalk River has surpassed the expectations of its designers... it has been operating at the highest neutron flux density of any experimental pile in existence, enabling the scientists to obtain results in fundamental research which would be difficult if indeed possible, to attain in any other pile.

"The measures taken to stimulate prospecting for and mining of uranium in Canada by establishing a guaranteed price for ores and concentrates and by permitting publicity to be given to information on uranium properties in the stages of prospecting and exploration have resulted in much activity in these fields and several very promising discoveries have already been reported.

VI. INDICATIONS OF PROGRESS OF BRITISH ATOMIC ENERGY PROGRAMME.

A. British Summary of Progress Made.

1. The British Atomic Energy programme is the responsibility of the Minister of Supply, who was empowered by the Atomic Energy Act of 1946 to direct and control the use and development of atomic energy.
2. The Atomic Energy Act gave the Minister of Supply powers to control the mining of radioactive ores and their export, the building of atomic energy plants and the publication of technical information. The Act also enabled the Ministry to impose secrecy on atomic energy patent applications.
3. The first step in the programme was the setting up of a Research Establishment at Harwell, Berkshire, on the site of a former R.A.F. airfield. The Establishment, whose Director is Sir John Cockcroft, has made rapid progress in the three and a half years of its existence. The first British nuclear reactor (atomic pile) -- the G.L.E.E.P. (Graphite low energy experimental pile) -- was completed in August 1947, less than eighteen months after work began on the site; and a month later, in September 1947, the first British radioisotopes produced in G.L.E.E.P. were delivered to a British hospital. G.L.E.E.P. is a low-powered reactor; a much larger pile (though still on the research scale) -- the B.E.P.O. (British Experimental pile) -- was completed in July 1948. Radioisotopes sufficient to meet all British needs and to allow of increasing exports are now produced from B.E.P.O.; and both piles are in constant use for nuclear physics research. Early this year the first plutonium was extracted at Harwell -- a small amount, but sufficient for investigations of the chemical and engineering problems which are met in the large-scale handling of plutonium.

These investigations are being carried out in the "Hot" laboratory at Harwell, the first wing of which was completed in June of this year. In this building, where elaborate ventilation and remote-control apparatus, and numerous monitoring devices protect workers from radioactive and toxic hazards, chemical research in the handling of plutonium and fission products is being carried on.

Particle accelerators, such as the cyclotron, Van de Graaf machine and linear accelerator, are either completed or under construction at Harwell. There are Divisions concerned with metallurgy, and with chemical engineering; there is a branch of the Medical Research Council studying the medical and biological aspects of atomic energy; and in addition Harwell calls on the scientific resources of British industry by means of research contracts. Nearly 3000 people are now employed at Harwell, of whom about 600 are scientists.

4. Closely connected with the Research Establishment is the work of the Ministry's Radiochemical Centre at Amersham, where natural and artificial radioactive substances are handled. At Amersham laboratories have been built with the same elaborate facilities as in the Harwell "hot" laboratory; and in them radium and radon appliances are made for medical and industrial use, and radioisotopes from the Harwell pile are processed and distributed.

5. The Ministry's plans for the production of fissile material (plutonium or U 235) in quantity are under the direction of Lord Portal of Hungerford, formerly Chief of the Air Staff. A plant is now in operation at Springfields, near Preston, Lancashire, for the refining of uranium from ores and the manufacture of canned uranium slugs. In the autumn of 1947 work started on the site of the former Royal Ordnance Factory at Sellafield, Cumberland, where large-scale reactors are being built for the production of plutonium from the canned slugs manufactured at Springfields. Construction of the Sellafield factory (now known as Windscale) is well advanced.

6. Ancillary to its production programme, the Ministry of Supply, with the assistance of the Geological Survey, conducts an Empire-wide search for new sources of radioactive ore. New types of prospecting counter have been developed at Harwell and issued to Colonial Surveys. In March last the Ministry offered a ten-year guaranteed minimum price for all uranium ores, containing over 10 per cent uranium, produced in the Colonial Empire.

7. As to the alternative end-uses of atomic energy, the Minister of Defence told the House of Commons in May 1948 that all types of modern weapons, including atomic weapons, were being developed. He declined to give further information about the development of atomic weapons on the ground that this would not be in the public interest.

Several alternative plans for the design of power-producing reactors are being developed at Harwell.

B. Excerpts from British Statements Regarding the Atomic Energy Programme.

1. Prime Minister Attlee Announces Setting up of Atomic Energy Research Establishment (Hansard's Parliamentary Debates, House of Commons, October 29, 1945, col. 38)

The Prime Minister:

"In accordance with a recommendation which has been received from the Advisory Committee on Atomic Energy of which the right hon. Gentleman the Member for the Scottish Universities (Sir J. Anderson) is the Chairman, the Government have decided to set up a research and experimental establishment covering all aspects of the use of atomic energy. Accommodation is being provided for the establishment at Harwell airfield near Didcot. I am advised that the danger to surrounding areas from the experimental station is negligible. It has further been decided that in view of the importance of this work to the Service Departments, responsibility for research on this subject which has hitherto rested with the Department of Scientific and Industrial Research should be transferred to the Ministry of Supply. The Tube Alloys Directorate (which is the name by which the technical organization dealing with these matters has hitherto been known) will accordingly become a part of that Ministry. The Department of Scientific and Industrial Research will, however, be represented both on the Advisory Committee and on some of its technical sub-committees."

2. Mr. Herbert Morrison Announces U.K. to Push its Atomic Energy Programme (Hansard's, House of Commons, Oct. 30, 1945, col. 344)

Mr. Morrison: "Now that the war is over, it is naturally the intention and desire of His Majesty's Government to make plans for the development of the process in this country. We must know all we can about it, certainly in so far as there are potential economic uses for atomic energy of value to our country. To my mind it is undesirable that British should be behind in knowledge of the subject and its potentialities..."

3. Prime Minister Attlee Announces Plans for Production of Fissionable Material (Hansard, House of Commons, January 29, 1946, column 382).

The Prime Minister: "The House will recall that on October 29, last I announced that the Government had decided to set up a research and experimental establishment at Harwell, near Didcot, to be concerned with all aspects of the use of atomic energy. This establishment will require fissile material for its work, and the Government have accordingly had under consideration the most suitable organization for the production of such material for this and other purposes. The object in view will be to make available as speedily as possible material in sufficient quantity to enable us to take advantage rapidly of technical developments as they occur, and to develop our programme for the use of atomic energy, as circumstances may require. The production of these materials will be a responsibility of the Ministry of Supply and the appropriate organization is being set up within that Department.

"The choice of a suitable head for this organization is clearly a matter of supreme importance, and for this new post the Government have been fortunate in securing the services of Marshal of the Royal Air Force Lord Portal of Hungerford. I am also happy to be able to inform the House that a very distinguished scientist in the person of Professor J.D. Cockcroft has been selected for the post of director of the research establishment at Harwell. Professor Cockcroft is at present director of the Canadian experimental atomic energy plant, and it has been arranged with the Canadian authorities that he should remain in Canada for the time being until they have been able to appoint a successor to him in that capacity."

4. Minister of Supply Speaks on the Industrial Development of Atomic Energy (Hansard, House of Commons, March 28, 1946, col. 700)

The Minister of Supply (Mr. John Wilmot): "It has been decided that as much of the resources of this country as can possibly be made available shall be devoted to this work. It is the intention to marshal the very best brains in the country in solving the problems which confront us... The execution of this project, the main production plant, is a major technological effort.

"I was asked to state the money which the Government are prepared to spend upon it. I will say this: The limit of what we can do in this direction is a physical, and not a financial, limit. Whatever we can do we shall do."

5. Prime Minister Attlee Speaks on the Passage of British Atomic Energy Legislation (Hansard, House of Commons, Oct. 8, 1946)

"In debate on the second reading of Atomic Energy Bill, Prime Minister said: "The House is in the presence of an invention and discovery of most far reaching possibilities, and in those circumstances it is quite clear that its development must be guided in the national interest. The Government must have adequate powers of control. It is on those broad lines of ensuring safety for this country and at the same time not unduly hampering research that this Bill has been drafted..."

In the same debate in reply to an enquiry why atomic energy had not been entrusted to a Minister whose position and authority were greater than that of a Minister of Supply who was not in the Cabinet, the Prime Minister said that he had always kept the general supervision of the broad matter in his own hands as Prime Minister. It was a major consideration of the Government, but the Minister of Supply was entrusted with the actual physical working.

6. Announcement of Promulgation of the British Atomic Energy Act.

The Atomic Energy Act giving H.M. Government the power to control the use and development of atomic energy received the royal assent on November 6, 1946.

7. Minister of Supply Announces Atomic Energy Site at Sellafield (Hansard, House of Commons, July 23, 1947)

The Minister of Supply: "On 29th January 1946 the Prime Minister announced the setting up of an organization to be responsible for the provision of fissile material for research and other purposes. It has since been announced that the first stage of this process, viz., the production of pure uranium from pitch-blende concentrates, will be carried out at the Ministry of Supply factory at Springfields, near Preston.

"Consideration has been given to the location of the second stage of the process, viz., the production of a chain-reacting pile of fissile material from the uranium produced at Springfields.

"In addition to purely technical considerations, it was necessary, in order to save much time, to find a prepared site with services already developed, and, if possible, in reasonable proximity to Springfields..."

The atomic energy project will, therefore, be located at Sellafield. Building and engineering work will begin in the near future, and will give employment to a considerable number of men for some time to come. For the time being, there will be no change in the present use of the Royal Ordnance factory at Drigg."

8. First British Atomic Pile Commences Operation on August 16, 1947. (Washington Times Herald, August 17, 1947)

"The United Kingdom's first atomic pile is called "Gleep" (graphite low energy experimental pile) and was

built primarily for experiments in nuclear physics. It will be used to produce radioactive isotopes for biological and medical research.

"The pile is the first of three planned by Britain. Another will start operation at Harwell next year and an atomic energy power plant will go up along the Cumberland coast in northwest England.

"Like that of the United States, the first Harwell pile works with a uranium base."

9. British Particle Acceleration Equipment (Atomic Scientists News, 1948, Volume I, No. 8)

On September 20 1947, H. W. B. Skinner in a lecture to the British Atomic Scientists Association about atomic energy research establishment, outlined plans for pure nuclear physics research for which the following machines were being constructed for particle acceleration: Van de Graaff machine, Synchrocyclotron, Synchrotron, Linear accelerator.

10. Announcement of Delivery of First British Produced Radioisotopes in September 1947.

It was announced in the British press on May 10, 1948, that the first delivery of British produced radioisotopes was made to a hospital in September 1947.

11. Minister of Defence Announces U.K. Developing Atomic Weapons (Hansard, House of Commons, May 12, 1948, Column 2128)

Mr. George Jeger asked the Minister of Defence whether he is satisfied that adequate progress is being made in the development of the most modern types of weapon.

The Minister of Defence (Mr. A.V. Alexander): Yes, Sir. As was made clear in the Statement Relating to Defence, 1948 (Command 7327), research and development continue to receive the highest priority in the defence field, and all types of modern weapons, including atomic weapons, are being developed.

Mr. Jeger: Can the Minister give any further information on the development of atomic weapons?

Mr. Alexander: No. I do not think it would be in the public interest to do that.

12. Promulgation of the British Radioactive Substances Act, June 30, 1948.

The Radioactive Substances Act empowering His Majesty's Government to secure the protection of the health of work people and of the public generally against the effects of undue exposure to radiation, received the royal assent on June 30, 1948.

13. Britain's Second Atomic Pile Commences Operations on July 3, 1948 (Ministry of Supply Press Notice, July 3, 1948)

Britain's second atomic pile, the new large Harwell Pile, began operating at low power on Saturday, July 3 1948.

With a rated output of 6000 kw, the Harwell Pile has been designed primarily as an experimental tool, to provide as many facilities as possible without unduly complicating the engineering of the structure. When operating at rated output the Pile should be able to produce, by transmutation of inactive elements, all the artificial radioactive isotopes required in this country by medical and other research workers.

Like Gleep, the Harwell Pile is a graphite moderated air cooled pile, consisting of several hundred tons of graphite blocks in which a large number of cylindrical rods of uranium are arranged in a regular lattice.

14. First British Plutonium Produced (Ministry of Supply Press Notice, March 6, 1949)

For the first time Britain has produced plutonium-- the fissile element which can be used for the creating of atomic power.

This is one of the most important steps forward in the country's atomic energy programme. The plutonium was made at the Ministry of Supply Atomic Energy Research Establishment at Harwell.

The plutonium produced at Harwell was extracted from a uranium slug which had been irradiated for several months in Gleep, the low power atomic pile.

Because of the Low Power at which Gleep Operates, the Amount of Plutonium is Small, But it is Sufficient for Investigating the Chemical and Chemical Engineering Problems Which Will Be Met in the Large Scale Handling of Plutonium.

Plutonium, which can only be produced in quantity in an atomic pile, does not exist naturally on the earth. It was first produced in quantity in 1942 in America and being fissile can be made to break up and give out great energy.

When the slug was unloaded from Gleep it was stored for some time to ensure that the intense radioactivity decayed so that the experimental work could safely begin.

15. Ministry of Supply Offers to Buy Atomic Energy Raw Materials Produced in Colonies (Ministry of Supply Press Notice, March 21, 1949)

An effort to stimulate interest among Colonial mining houses and prospectors, in locating substantial deposits of uranium and thorium, is being made by the Ministry of Supply.

An announcement is being published in all Colonial territories where there is considered to be a possibility of locating the radioactive materials.

Part of the announcement issued in the Colonies runs as follows:-

"The United Kingdom Ministry of Supply offers to buy all uranium ores and concentrates produced in the Colonial Empire during the period of ten years from the date of this announcement at a minimum price of 13s./9d. per lb. of contained uranium oxide delivered f.o.b. ocean port."

16. Completion of Harwell "Hot" Laboratory (Ministry of Supply Press Notice, June 24, 1949)

One wing of the new Radiochemical Laboratory at the Atomic Energy Research Establishment, Harwell, is now ready. Scientists are to start work in it almost immediately.

Announcing this today, the Ministry of Supply says that the building is the most complicated project of its kind ever undertaken on this side of the Atlantic.

What the Laboratory Will Be Used For

The laboratory will be used primarily for research on the chemical problems of separating the fissile element plutonium from uranium rods that have been irradiated in a pile. The rods also contain very radioactive "fission products," and the chemical separation problem involved means that the scientists will be tackling one of the most difficult jobs in the Atomic Energy Programme.

The laboratory will also be used for other chemical work with radioactive materials, including the separation of radio-isotopes produced in BEPO (British Experimental Pile), and processing materials that have been irradiated in the pile.

The type of work to be carried on in the laboratory means that entirely new problems-- particularly regarding the health and safety of the worker and the control of any active material in dust, gasses or effluent -- will have to be tackled.

Scientists Call it the "Hot" Laboratory

The building-- designed to provide every facility for working with "hot" (radioactive) materials-- is known at Harwell as the "hot" laboratory.

17. Testimony of Dr. Robert F. Bacher before the Joint Congressional Committee on Atomic Energy, July 6, 1949, Regarding Progress of the British Atomic Energy Programme (Hearing before the Joint Committee on Atomic Energy, Congress of the United States-- Eighty-First Congress, on Investigation into the United States Atomic Energy Project, Part 19, July 6, 1949, United States Government Printing Office, page 794.)

Mr. Jackson: ... do you feel that it will be a very short time or will it be easy for other countries to catch up with the progress that we are normally capable of bringing about?

Dr. Bacher: Let us take a specific example. I think maybe we can do this without getting on too delicate ground.

The British have an atomic energy project. They are setting about the production of fissionable material and have announced that they are developing and intend to produce atomic weapons. I am sure they will be successful in this undertaking. They have all of the technical know-how, all of the scientific background that is necessary for such a development, and I believe it is only a question of time until they do produce bombs...

November 18, 1949.
RP/C

The British have an atomic energy project. They are
 applying about the production of fissile material
 and have announced that they are developing and intend to
 produce atomic weapons. I am sure they will be successful
 in this undertaking. They have all of the technical
 know-how, all of the scientific background that is necessary
 for such a development, and I believe it is only a question
 of time until they do produce bombs.

November 10, 1949.
 5/10