

# President Franklin D. Roosevelt and the Atomic Bomb

Albert Einstein  
Old Grove Rd.  
Nassau Point  
Peconic, Long Island

August 2nd, 1939

F.D. Roosevelt,  
President of the United States,  
White House  
Washington, D.C.

Sir:

Some recent work by E.Fermi and L. Szilard, which has been communicated to me in manuscript, leads me to expect that the element uranium may be turned into a new and important source of energy in the immediate future. Certain aspects of the situation which has arisen seem to call for watchfulness and, if necessary, quick action on the part of the Administration. I believe therefore that it is my duty to bring to your attention the following facts and recommendations:

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347 pages of letters, reports, official memorandum, clippings and publication excerpts, dating between 1939 and 1945. Documents reference matters related to the development and use of the atomic bomb during World War II, including correspondence and writings about the Manhattan Project, general nuclear research, and the potential for enriching uranium.

October 19, 1939

My dear Professor:

I want to thank you for your recent letter and the most interesting and important enclosure.

I found this data of such import that I have convened a Board consisting of the head of the Bureau of Standards and a chosen representative of the Army and Navy to thoroughly investigate the possibilities of your suggestion regarding the element of uranium.

I am glad to say that Dr. Sachs will cooperate and work with this Committee and I feel this is the most practical and effective method of dealing with the subject.

Please accept my sincere thanks.

Very sincerely yours,

Dr. Albert Einstein,  
Old Grovo Road,  
Massau Point,  
Peconic, Long Island,  
New York.

C O P Y

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(signed) Franklin D. Roosevelt

Dr. Albert Einstein,  
Old Grove Road,  
Nassau Point,  
Peconic, Long Island,  
New York.

On Display in South Sea

C O P Y

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NEW YORK, N. Y.

FROM ALEXANDER SACHS

THE PRESIDENT  
THE WHITE HOUSE  
WASHINGTON, D. C.



JOHN MOYNAHAN & COMPANY, INC.

155 EAST 44TH STREET, NEW YORK, N. Y. 10017

MURRAY HILL 7-2345

CABLE: MOYNAJON

*Public Relations*

September 29, 1965

69-453  
Miss Elizabeth B. Drewry, Director  
Franklin D. Roosevelt Library  
Hyde Park, New York

Dear Miss Drewry:

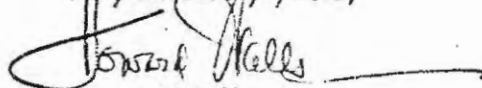
Thank you very much for your September 24 letter and the copies of four more letters on nuclear fission. We have carefully noted your statement that literary rights are limited to President Roosevelt's letters and Professor Einstein's 1939 letter to him.

You and Mr. Nixon have been so helpful to us that we should like to do something for you. In his September 9 letter to us, Mr. Nixon said it was not clear whether Leo Szilard's undated memorandum was an enclosure to Einstein's letter or to Sachs's letter. Our researches have revealed the following information, verified by Atomic Energy Commission history on this subject:

The Einstein letter dated August 2, 1939, emerged from conferences between Alexander Sachs and Leo Szilard. Einstein signed it at their request. Sachs asked Szilard to write an accompanying memorandum explaining more fully the underlying science of nuclear fission and stressing chain reaction. Sachs was to deliver both documents to President Roosevelt in an interview with him. President Roosevelt became very preoccupied with the international crisis and was busy trying to win repeal of the arms embargo from a reluctant Congress. Therefore Sachs waited for a more propitious time to see him, and arranged an appointment for October 11. He wrote his October 11 letter, placed it with the Einstein letter and the Szilard memorandum to form a dossier, and went to the White House. At the beginning of the interview, Sachs read his own October 11 letter as President Roosevelt listened, then delivered all three documents to him. As the interview came to a close, President Roosevelt called in his aide, "Pa" Watson, and said, "This requires action."

Therefore the three documents, taken together, may be characterized as a unit — the dossier which set in motion the machinery which produced The Bomb.

Very sincerely yours,

  
Howard Walls

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THE FRANKLIN D. ROOSEVELT  
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Albert Einstein  
Old Grove Rd.  
Nassau Point  
Peconic, Long Island

August 2nd, 1939

F.D. Roosevelt,  
President of the United States,  
White House  
Washington, D.C.

Sir:

Some recent work by E. Fermi and L. Szilard, which has been communicated to me in manuscript, leads me to expect that the element uranium may be turned into a new and important source of energy in the immediate future. Certain aspects of the situation which has arisen seem to call for watchfulness and, if necessary, quick action on the part of the Administration. I believe therefore that it is my duty to bring to your attention the following facts and recommendations:

In the course of the last four months it has been made probable - through the work of Joliot in France as well as Fermi and Szilard in America - that it may become possible to set up a nuclear chain reaction in a large mass of uranium, by which vast amounts of power and large quantities of new radium-like elements would be generated. Now it appears almost certain that this could be achieved in the immediate future.

This new phenomenon would also lead to the construction of bombs, and it is conceivable - though much less certain - that extremely powerful bombs of a new type may thus be constructed. A single bomb of this type, carried by boat and exploded in a port, might very well destroy the whole port together with some of the surrounding territory. However, such bombs might very well prove to be too heavy for transportation by air.

United States has only very poor ores of uranium in moderate quantities. There is some good ore in Canada and the former Czechoslovakia, while the most important source of uranium is Belgian Congo.

In view of this situation you may think it desirable to have some permanent contact maintained between the Administration and the group of physicists working on chain reactions in America. One possible way of achieving this might be for you to entrust with this task a person who has your confidence and who could perhaps serve in an unofficial capacity. His task might comprise the following:

a) to approach Government Departments, keep them informed of the further development, and put forward recommendations for Government action, giving particular attention to the problem of securing a supply of uranium ore for the United States;

b) to speed up the experimental work, which is at present being carried on within the limits of the budgets of University laboratories, by providing funds, if such funds be required, through his contacts with private persons who are willing to make contributions for this cause, and perhaps also by obtaining the co-operation of industrial laboratories which have the necessary equipment.

I understand that Germany has actually stopped the sale of uranium from the Czechoslovakian mines which she has taken over. That she should have taken such early action might perhaps be understood on the ground that the son of the German Under-Secretary of State, von Weizsäcker, is attached to the Kaiser-Wilhelm-Institut in Berlin where some of the American work on uranium is now being repeated.

Yours very truly,

*A. Einstein*

(Albert Einstein)

file  
Vannevar  
RSP  
Dr. Bush  
2-42

December 28, 1942.

Dear Van:-

I have yours of December sixteenth with postscript of December twenty-third in regard to the special project. I will approve the recommendations.

Please send me a memorandum as to how you think I should approach the Budget in asking for the appropriation.

I am returning your folder and letter duly sealed.

Always sincerely,

Dr. Vannevar Bush,  
Office of Scientific Research and Development,  
1530 P Street, N.W.,  
Washington, D. C.

(Atomic Bomb)

Documents Concerning the "Tube Alloy" Project, 1941-1944

in the Franklin D. Roosevelt Library 36  
Hyde Park, New York 19

L--Letter  
M--Memo  
C--Cablegram

- [L] Bush to Roosevelt, July 16, 1941, 1 page, with enclosures:  
"Report of the National Defense Research Committee, June 27, 1940-  
-June 28, 1941", ~~Secret~~ (Frontpiece and pages 34 and 35 only).  
PSF Safe File, Bush folder.
- [M] Roosevelt to Bush, March 20, 1942, 1 page. PSF Safe File, -Bush folder.  
with two attachments, Bush to Forester, March 16, 1942, 1 page and  
Bush to Roosevelt, March 16, 1942. All in PSF Safe File, Bush folder.
- [L] Bush to Roosevelt, June 19, 1942, 1 page, ~~Secret~~, and FDR's reply,  
July 11, 1942, 1 page, ~~Secret~~. PSF Safe File, Bush folder.  
for Hopkins
- [C] Churchill to Roosevelt/ Feb. 16, 1943, 1 page, ~~Secret~~.  
Hopkins Papers, A Bomb folder.
- [C] Hopkins to Churchill, Feb. 24, 1943, 1 page, ~~Secret~~. Hopkins Papers,  
A Bomb folder.
- [M] Bush to Hopkins, Feb. 26, 1943, 1 page, ~~Secret~~, with enclosure:  
[M] "Legal and Policy Basis for OSRD Interchange of Scientific  
Information with the British," 22 pages, ~~Secret~~. Hopkins Papers,  
A Bomb folder.
- [C] Churchill to Roosevelt for Hopkins, Feb. 27, 1943, 3 pages, ~~Secret~~.  
Summary of U.S.-U.K. relations on "Tube Alloy" project. Hopkins Papers,  
A Bomb folder.
- [C] Churchill to Roosevelt for Hopkins, Feb. 27, 1943, 1 page, ~~Secret~~.  
Hopkins Papers, A Bomb folder.
- [C] Churchill to Roosevelt for Hopkins, March 20, 1943, 1 page, ~~Secret~~.  
Hopkins Papers, A Bomb folder.
- [C] Hopkins to Churchill, March 20, 1943, 1 page, ~~Secret~~. Hopkins Papers,  
A Bomb folder.
- [M] James Conant to Bush, March 25, 1943, 6 pages, ~~Secret~~. Hopkins Papers,  
A Bomb folder.
- [M] Bush to Hopkins, March 31, 1943, 1 page, with enclosure:  
[M] "Interchange on S-1", March 31, 1943, 5 pages, ~~Secret~~.  
Hopkins Papers, A Bomb folder.
- [C] Hopkins to Lord Halifax, April 15, 1943, 1 page with attachments:  
Hopkins to A. Eden, April 15, 1 page ~~Secret~~; Halifax to Hopkins,  
April 14, 1 page ~~Secret~~; Bush to Hopkins, May 26, 1943, 1 page  
with enclosure: Memo of Conference with Hopkins and Lord Cherwell,  
May 25, 1943, 3 pages ~~Secret~~. Hopkins Papers, A Bomb folder.



- [C] Churchill to Roosevelt for Hopkins, June 10, 1943, 1 page ~~Secret~~, Hopkins Papers, A Bomb folder.
- [C] Hopkins to Churchill, June 17, 1943, 1 page ~~Secret~~, Hopkins Papers, A Bomb folder.
- [C] Roosevelt to Churchill, July 20, 1943, 1 page ~~Secret~~, Hopkins Papers, A Bomb folder.
- [M] "DJB" to Roosevelt, July 28, 1943, 1 page, with enclosure:  
[L] Carroll Wilson to Roosevelt, July 28, 1943, 1 page ~~Secret~~.  
PSF - Bush folder.
- [M] Bush to McIntyre, Aug. 4, 1943, 1 page with enclosures: [L] Robert Oppenheimer to Roosevelt, July 9, 1 page ~~Secret~~; [M] Tully to Conant, July 1, 1 page; [L] Roosevelt to Oppenheimer, June 29, 2 pages ~~Secret~~; [L] Roosevelt to General Groves, June 29, 1 page ~~Secret~~; [M] Bush to Forster, June 28, 1 page, enclosing drafts of above letters to Oppenheimer and Groves. PSF, Bush folder.
- [M] Tully to Roosevelt, undated, c. Aug. 11, 1943, 1 page, with the following attachments: [M] Roosevelt to Hopkins, July 14, 1 page; Hopkins to Tully, Aug. 11, 1 page; [L] Bush to Roosevelt, Aug. 7, 2 pages ~~Secret~~; [L] Sir John Anderson to Bush, Aug. 6, 1 page ~~Secret~~; [L] Bush to Anderson, Aug. 6, 3 pages ~~Secret~~; Anderson to Bush, Aug. 4, 4 pages ~~Secret~~. PSF, Bush folder.
- [L] Bush to Roosevelt, Aug. 23, 1943, 1 page ~~Secret~~, "Tubealloy Interchange with the British". Hopkins Papers, A Bomb folder.
- [M] J.M. Martin to Churchill, Sept. 9, 1943, 1 page, with the following attachments: Churchill to Lord President (Anderson?), Sept. 2, 1 page ~~Secret~~; Lord President to Churchill, Sept. 2, 1 page; extract from "Who's Who" on Sir Edward Appleton, 1 page; paraphrase of [C] Lord President to Churchill, Aug. 28, 2 pages. Hopkins Papers, A Bomb folder.
- [M] Roosevelt to Bush, Oct. 12, 1943, 1 page ~~Secret~~. PSF, Bush folder.
- [L] Henry L. Stimson to Gen. Watson, June 8, 1944, 1 page ~~Secret~~, with attachment: "Collaboration between ... the United States and the United Kingdom in the matter of Tube Alloys," December 10, 1943, 1 page. PSF, Combined Policy Commission folder.
- [M] Aide Memoire of conversation between Roosevelt and Churchill, Sept. 18, 1944, 1 page ~~Secret~~. Map Room Papers, Box 172.  
[Document is located in front of Tab "A".]

Items in HLH papers relating to "Tube Alloys" (Sherwood # 23)

- (1) FDR to Bush, naming him head of the National Defense Research Committee, 6-15-40.
- (2) J.M. Martin (WC's aide) to HLH, 1-23-42, on Tube Alloys. (PERSONAL)
- ✓ (3) WC to HLH, 2-16-43, protesting U.S. refusal to carry out agreement to share information. [REDACTED]
- ✓ (4) ~~Wext~~ HLH to WC, 2-24-43, asking for a report on the "misunderstanding" from Sir Hohn Anderson. [REDACTED]
- ✓ (5) Bush to HLH, 2-26-43, on exchange of information with the British, enclosing:
  - (a) Bush to Carrol L. Wilson, 2-24-43, on policy to be followed in exchanging information; [REDACTED]
  - (b) Wilson to Bush, 2-4-41, on the exchange of information; [Secret]
  - (c) John T. Connor to Wilson, 2-6-43, on "Foreign Liaison Activities of NDRC and OSRD [Canada mentioned];
  - (d) Sec. War Patterson to Bush, 9-12-40, hopes NDRC will get in touch with Tizard;
  - (e) Bush to Marshall and Stark, 9-30-40, on his recent meeting with the Tizard mission; [REDACTED]
  - (f) Knox and Stimson to Bush, 10-24-40, stating policy to be followed in exchange of information; [REDACTED]
  - (g) Memorandum by Bush, 10-25-40, proposing method to be followed in carrying out interchange policy [Canada mentioned] [REDACTED]
  - (h) Bush to Knox, 10-30-40: assumes Canada included in exchange agreement; [REDACTED]
  - (i) Bush to Stimson, 10-30-40, same as above; [Secret]
  - (j) Patterson and Forrestal to Bush, 11-20-40: Canada included; [REDACTED]
  - (k) Bush to Admiral Anderson, CNO, 9-28-40: may Tizard mission meet with Uranium Committee of the NDRC. [REDACTED]
  - (l) Admiral Anderson to Bush, 10-1-40, enclosing Sec. Navy memo of 9-28-40 on exchange of information. [REDACTED] [Secret] [REDACTED]
- ✓ (6) WC to HLH, 2-27-43, asking for decision on U.S. policy of interchange of information. [REDACTED]

✓(7) WC to HLH, 2-27-43, summarizing history of U.S.-British exchange of information on Tube Alloys [secret].

✓(8) WC to HLH, <sup>3-20-43</sup>2-27-43, asking for reply to above [secret].

? (9) HLH to WC, 3-20-43: is "working on tube alloys." [secret]

(12) WC to HLH, 4-1-43: concerned at no reply to his 2-27-43 [secret].

(13) Bush to HLH, 4-5-43, encl. a New York Times clipping on German heavy water plant to show dangers of security leaks.

(10) Conant to Bush, 3-25-43, on British demand for all information [secret].

(11) Bush to Hopkins, 3-31-43, defending U.S. restrictions on interchange of information [secret].

(14) HLH to Eden, 4-14-43. Will send a telegram on information matter. [secret]

(16) Bush to HLH, 4-27-43, on a meeting with Dean Mackenzie, the Canadian scientist primarily concerned with tube alloys [secret]

✓(17) Memo of conference of HLH and Lord <sup>er</sup>Churwell at White House, 5-25-43, on U.S. policy respecting exchange of information; memo by Bush [secret].

? (18) Churwell to HLH, 5-30-43, on his recent trip to U.S. (thanks HLH for hospitality).

✓(15) Halifax to HLH, 4-14-43, sending message on tube alloys arrangement for information exchange [secret]

✓(19) WC to HLH, 6-10-43: grateful for HLH's help in information exchange matter [secret]

✓(20) HLH to WC, 6-17-43: "The matter of tube alloys is in hand and will be disposed of completely the first of the week." [secret]

(21) HLH to Churwell, 6-28-43, replying to C.'s 5-30-43.

(22) HLH to FDR, 7-20-43: FDR made a "firm commitment on exchange of information . . ." [secret]

(23) FDR to Bush, 7-20-43. Arrangement with G.B. means "complete exchange of information." [secret]

~~(24) xxx Bush to FDR, 8-7-43, xxx carrying out xxx arrangement with the British xxx [secret] xxx~~

(23A) Bush to FDR, 8-7-43, on manner of future exchange of info. (secret)

✓ (24) FDR to WC, 7-20-43. "I have arranged satisfactorily for tube alloys." (secret) ✓

✓ (25) Bush to FDR, 8-23-43, on exchange of information with the British (secret) ✓

✓ (26) J.M. Martin (WC's aide) to WC, 9-9-43, enclosing an exchange of wires on make-up of the Combined Policy committee; Akers not acceptable to US; "our team in Canada" mentioned. ✓

✓ (27) ~~Aide Memoire, FDR to WC, 9-18-44, on exchange of information.~~

THE ERNEST KEMPTON ADAMS FUND FOR PHYSICAL RESEARCH  
OF COLUMBIA UNIVERSITY

REPRINT SERIES

INSTANTANEOUS EMISSION OF FAST NEUTRONS IN  
THE INTERACTION OF SLOW NEUTRONS  
WITH URANIUM

By

LEO SZILARD AND WALTER H. ZINN

Reprinted from THE PHYSICAL REVIEW, Vol. 55, No. 8, April 15, 1939



### Instantaneous Emission of Fast Neutrons in the Interaction of Slow Neutrons with Uranium\*

Recently it became known<sup>1</sup> that uranium can be split by neutrons into two elements of about equal atomic weight. In this fission of uranium the two elements produced have a large neutron excess; moreover they are probably produced in an excited nuclear state. One might therefore expect that these excited fragments instantaneously emit neutrons and that perhaps the number emitted is even larger than one per fission.

One might also expect a delayed emission of neutrons—as was first pointed out by Fermi—if some of the fragments go through one or more beta-transformations before they emit a neutron. Delayed emission of neutrons caused by the action of both slow and fast neutrons on uranium has recently been reported by Roberts, Meyer, and Wang,<sup>2</sup> who find a period of about 12 seconds.

In order to see if there is an instantaneous emission of neutrons from the fission of uranium we have performed the following experiment. We exposed uranium oxide to neutrons which were slowed down by paraffin wax, using as a source of neutrons a block of beryllium from which photoneutrons were liberated by the gamma-rays of radium. A helium-filled ionization chamber connected to a linear amplifier served as a detector for fast neutrons. The ionization pulses of the chamber were observed visually by means of a cathode-ray oscillograph and were recorded by the usual counting arrangement.

Figure 1 shows a diagram of the experimental arrangement. The ionization chamber is covered by a cadmium sheet cap *G* which prevents the thermal neutrons from penetrating to the helium ionization chamber. A cadmium sheet shield *H*, 0.5 mm thick, is used to cover the cylindrical box *E* which contains 2300 g of uranium oxide. The uranium oxide is screened from the thermal neutrons by this shield and can be exposed to them simply by removing the shield.

We observed about 50 pulses per minute from the helium chamber when we exposed the uranium oxide to the thermal neutrons in the absence of the cadmium shield *H*, but obtained only 5 pulses per minute when the uranium was screened from the thermal neutrons by the cadmium shield. The difference of about 45 pulses per minute we have to attribute to fast neutrons emitted from uranium under the action of thermal neutrons. It is reasonable to assume that this emission of fast neutrons is connected with the fission of uranium.

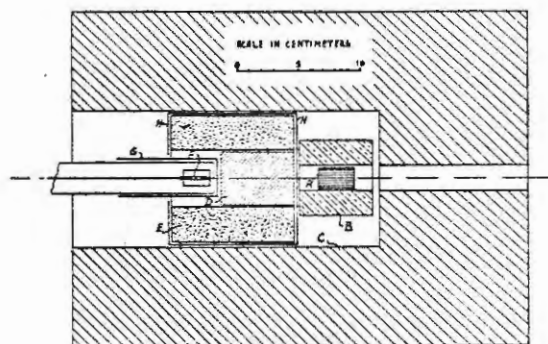


FIG. 1. Arrangement for the observation of the emission of fast neutrons from uranium. A, Radium. B, Beryllium block. C, Paraffin wax. D, Lead block. E, Box filled with uranium oxide. F, Ionization chamber. G, Cadmium sheet cap. H, Cadmium sheet shield.

Control experiments were carried out in which uranium was replaced by lead. The effect of the presence and absence of the cadmium shield *H* and the cadmium cap *G* was tested.

In order to estimate the number of fast neutrons emitted per fission under the action of thermal neutrons we used an ionization chamber lined with a thick layer of uranium oxide having an area of 25 cm<sup>2</sup>. This uranium chamber was put in place of the helium chamber without otherwise materially changing the experimental arrangement. Under these conditions the uranium chamber gave about 45 fissions per minute. Assuming the range of the fission fragments to be about 0.005 g per cm<sup>2</sup> in uranium oxide, the observed 45 fissions per minute should occur in a surface layer, weighing 0.13 g, of the thick uranium oxide lining. Accordingly, about 800,000 fissions per minute should occur in the 2300 g of uranium oxide which was used in our experiment. By taking into account the solid angle, the size of the helium chamber and the pressure used, and by assuming that the "fission neutrons" have an average collision cross section in helium of  $3.5 \times 10^{-24}$  cm<sup>2</sup> we find the number of neutrons emitted per fission to be about two.

This number is of course only a rough estimate; the main cause of uncertainty is the considerable variation of the cross section of helium with the neutron energy in the region around one million volts.<sup>3</sup> A hydrogen-filled

ionization chamber is now being used in order to obtain a more accurate estimate. It seems to be established, however, that the order of magnitude is one neutron per fission.

Anderson, Fermi and Hanstein have independently, and by a different method, carried out experiments on the neutron emission connected with the fission of uranium. Our observations are consistent with their results, and we wish to thank them for communicating their results to us before publication.

While from our observations we can only say that the time delay involved in this "instantaneous" neutron emission appears to be less than one second, we should expect, for theoretical reasons, this emission to take place within less than  $10^{-14}$  second.

We have also looked for a delayed emission of fast neutrons by performing the following experiment. The uranium oxide was irradiated for some length of time in the arrangement shown in Fig. 1. Then the radium was quickly removed from the beryllium block and the cathode-ray oscillograph screen was watched for a period of 15 seconds for an indication of a delayed emission of fast neutrons. After the radium is removed there is no gamma-ray background to set a lower limit for the observable helium recoil energy; the only slight background remaining is due to electrical fluctuations of the amplifier. In 50 experiments, corresponding to a total observation time of

more than 12 minutes, we observed only two pulses which may or may not have been due to a delayed emission of fast neutrons. This is to be compared with the emission of 45 fast neutrons per minute, the number observed while the radium is inside the beryllium block. We conclude that, if slow neutrons falling on uranium cause a delayed emission of neutrons which are sufficiently fast for us to observe, their number must be very much smaller than the number of neutrons which we have observed in the instantaneous emission.

We are indebted to Dr. S. Seely for his assistance in carrying out some of these experiments. We wish to thank the Department of Physics of Columbia University for the hospitality and the facilities extended to us, and also wish to thank the Association for Scientific Collaboration for enabling us to use one gram of radium in these experiments.

LEO SZILARD  
WALTER H. ZINN

Pupin Physics Laboratories,  
Columbia University,  
New York, New York,  
March 16, 1939.

\* Publication assisted by the Ernest Kempton Adams Fund for Physical Research of Columbia University.

<sup>1</sup> O. Hahn and F. Strassmann, *Naturwiss.* 27, 11 (1939); L. Meitner and R. Frisch, *Nature* (February, 1939).

<sup>2</sup> R. B. Roberts, R. C. Meyer, and P. Wang, *Phys. Rev.* 55, 510 (1939).

<sup>3</sup> H. Staub and W. E. Stephens, *Phys. Rev.* 55, 131 (1939).

EXECUTIVE ORDER

There is hereby created a

National Defense Research Committee

to be composed of a Chairman, one member each from the War, Navy and Commerce Departments, and one from the National Academy of Sciences, together with three members at large who shall be distinguished scientists or engineers. The members shall serve, as such, without compensation, and shall receive remuneration only for their reasonable expenses of travel in connection with their duties.

This Committee shall be attached to the Advisory Commission to the Council of National Defense and shall be provided with office facilities in the manner provided for that Commission.

It shall be the function of this Committee to correlate and support scientific research on the mechanisms and devices of warfare, except on the problems of flight included in the field of activities of the National Advisory Committee for Aeronautics. It shall aid and supplement, rather than replace, the activities of the War and Navy Departments; and shall be concerned with research for the creation and improvement of instrumentalities, methods, and materials of warfare rather than with industrial development and manufacture. In carrying out its function it shall provide, by agreement with individuals, educational or scientific institutions, or industrial organizations, for studies, experimental investigations, and reports, within the limits of such funds as shall be provided for its purposes.

June 15, 1940

My dear Mr. Secretary:

I am enclosing a copy of the note which I wrote today to Dr. Vannevar Bush, which is self-explanatory. It is clearly understood between Dr. Bush and me that this does not in any way supplant any existing work now going on in the Navy Department. Naturally, you will want to cooperate closely with Dr. Bush and his committee.

It seems advisable to me that after conferences with Dr. Bush and appropriate persons in the Navy Department an officer be assigned to correlate the work of Dr. Bush and his committee with the Navy Department.

Very sincerely yours,

The Honorable  
The Secretary of Navy x18  
Washington, D. C.

(1 Bush V.)

THE WHITE HOUSE  
WASHINGTON

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JUN 15 1940

Dr. Vannever Bush,  
President of the Carnegie Institution of Washington,  
Washington, D. C.

My dear Dr. Bush:

In order that scientific research on the mechanisms and devices of warfare may be more completely correlated and supported in the interests of national defense, I am creating a National Defense Research Committee.

I am happy to appoint you Chairman of this Committee, and to have your assurance from our recent conference that you will be willing to accept this post, and thus to contribute your services to the guidance of the work of this important Committee.

The Committee will consist of not less than eight members, and will be attached to the Advisory Commission to the Council of National Defense. Through this organization you will be provided with such facilities and funds as may be necessary for the operation of the office of the Committee. It is expected that, in the furtherance of the objective of the Committee, you will arrange, by agreement with research laboratories in educational and scientific institutions and in industry, for such studies, experimental investigations and reports, as may be found desirable in order to accelerate the creation or improvement of the instrumentalities of warfare. I feel sure that you will have the hearty support of the scientists of this country in these efforts, and that they will cooperate to the utmost under the guidance of your Committee.

Your Committee will include in its membership officers of distinction as representatives of the War and Navy Departments. I trust that there will be the closest of cooperation between the Committee and the armed services. It is not intended that the work of your Committee should replace any of the excellent work which these services are now carrying on, either in their own laboratories or by contract with

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The National Archives



THE FRANKLIN D. ROOSEVELT  
LIBRARY

Hyde Park, N. Y.

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FROM THE PAPERS OF  
HARRY L. HOPKINS



industry. Rather it is to be hoped that you will supplement this activity by extending the research base and enlisting the aid of scientists who can effectively contribute to the more rapid improvement of important devices, and by study determine where new effort on new instrumentalities may be usefully employed. In order to facilitate your contact with the needs and opportunities of the armed services, I will request that an officer be detailed from the Army and from the Navy to your office.

You are authorized to appoint subcommittees on special fields, composed of scientists and engineers of distinction, together with officers designated by the services. It is understood that all members of the main Committee, and of the subcommittees, will serve as such without remuneration. It will be proper, however, to charge the reasonable travel expenses of such members to the funds of the Committee.

The National Academy of Sciences, and the National Research Council, were formed primarily to advise the agencies of government on scientific matters, when called upon for such service. They will, I feel sure, respond cordially to requests from your Committee for advice on such broad scientific problems as may arise. The members of the Academy and Council, when thus engaged, devote their services to government without remuneration, but it will be proper for your Committee to provide, by suitable agreement, for defraying the incidental expenses of such groups when they are thus engaged.

The National Bureau of Standards, and other government laboratories, may well be able to carry on effectively some of the research which your Committee deems necessary.

The National Advisory Committee for Aeronautics carries on research on the problems of flight. It is not expected, therefore, that your Committee will be directly concerned with problems in the special field already covered by the activities of the NACA. I trust that you will maintain close relationship with their affairs.

Recently I appointed a special committee, with Dr. Briggs of the Bureau of Standards as Chairman, to study into the possible relationship to national defense of recent discoveries in the field of atomistics, notably the fission of uranium. I will now request that this committee report directly to you, as the function of your Committee includes this special matter, and your Committee may consider it advisable to support special studies on this subject.

The Commissioner of Patents is considering plans for effectively evaluating, in cooperation with the Army and Navy, new ideas which may

GENERAL SERVICES ADMINISTRATION

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Hyde Park, N. Y.

FROM THE PAPERS OF  
HARRY L. HOPKINS



Three Centimeters

be submitted by inventors in the form of patent applications or simple memorandum form in connection with national defense. I am appointing the Commissioner a member of your Committee in order that there may be the closest possible contact with any such activity in evaluating suggestions, and referring them to the proper individuals, as may be undertaken in addition to the procedure now available for this purpose.

I will shortly appoint one member to your Committee from the Army and from the Navy.

The function of your Committee is of great importance in these times of national stress. The methods and mechanisms of warfare have altered radically in recent times, and they will alter still further in the future. This country is singularly fitted, by reason of the ingenuity of its people, the knowledge and skill of its scientists, the flexibility of its industrial structure, to excel in the arts of peace, and to excel in the arts of war if that be necessary. The scientists and engineers of the country, under the guidance of your Committee, and in close collaboration with the armed services, can be of substantial aid in the task which lies before us. I assure you, as you proceed, that you will have my continuing interest in your undertakings.

Cordially yours,

GENERAL SERIES ADMINISTRATION

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Hyde Park, N. Y.

Three Centimeters

FROM THE PAPERS OF  
HARRY L. HOPKINS

*1*  
*all correspondence of officers of these papers*  
*should be sent to the*  
*him*

June 15, 1940

Mr. Vannevar Bush  
President of the Carnegie Institution of Washington  
Washington, D. C.  
x1175709

4010

My Dear Mr. Bush:

In order that scientific research on the mechanisms and devices of warfairs may be more completely correlated and supported in the interests of national defense, I am creating a National Defense Research Committee. #

I am happy to appoint you Chairman of this Committee, and to have your assurance from our recent conference that you will be willing to accept this post, and thus to contribute your services to the guidance of the work of this important Committee.

The Committee will consist of not less than eight members, and will be attached to the Advisory Commission to the Council of National Defense. Through this organization you will be provided with such facilities and funds as may be necessary for the operation of the office of the Committee. It is expected that, in the furtherance of the objective of the Committee, you will arrange, by agreement with research laboratories in educational and scientific institutions and in industry, for such studies, experimental investigations and reports, as may be found desirable in order to accelerate the creation or improvement of the instrumentalities of warfairs. I feel sure that you will have the hearty support of the scientists of this country in these efforts, and that they will cooperate to the utmost under the guidance of your Committee. x272 x2240

Your Committee will include in its membership officers of distinction as representatives of the War and Navy Departments. I trust that there will be the closest of cooperation between the Committee and the armed services. It is not intended that the work of your Committee should replace any of the excellent work which these services are now carrying on, either in their own laboratories or by contract with industry. Rather it is to be hoped that you will supplement this activity by extending the research base and enlisting the aid of scientists who can effectively contribute to the more rapid

x335  
x463-6  
x172

improvement of important devices, and by study determine where new effort on new instrumentalities may be usefully employed. In order to facilitate your contact with the needs and opportunities of the armed services, I will request that an officer be detailed from the Army and from the Navy to your office.

x382

You are authorized to appoint subcommittees on special fields, composed of scientists and engineers of distinction, together with officers designated by the services. It is understood that all members of the main Committee, and of the subcommittees, will serve as such without remuneration. It will be proper, however, to charge the reasonable travel expenses of such members to the funds of the Committee.

The National Academy of Sciences, and the National Research Council, were formed primarily to advise the agencies of government on scientific matters, when called upon for such service. They will, I feel sure, respond cordially to requests from your Committee for advice on such broad scientific problems as may arise. The members of the Academy and Council, when thus engaged, devote their services to government without remuneration, but it will be proper for your Committee to provide, by suitable agreement, for defraying the incidental expenses of such groups when they are thus engaged.

The National Bureau of Standards, and other government laboratories, may well be able to carry on effectively some of the research which your Committee deems necessary.

x249-A

The National Advisory Committee for Aeronautics carries on research on the problems of flight. It is not expected, therefore, that your Committee will be directly concerned with problems in the special field already covered by the activities of the NACA. I trust that you will maintain close relationship with their affairs.

Recently I appointed a special committee, with Dr. Briggs of the Bureau of Standards as Chairman, to study into the possible relationship to national defense of recent discoveries in the field of atomistics, notably the fission of uranium. I will now request that this committee report directly to you, as the function of your Committee includes this special matter, and your Committee may consider it advisable to support special studies on this subject.

The Commissioner of Patents is considering plans for effectively evaluating, in cooperation with the Army and Navy, new ideas which may be submitted by inventors in the form of patent applications or simple memorandum form in connection with national defense. I am appointing the Commissioner a member of your Committee in order that

there may be the closest possible contact with any such activity in evaluating suggestions, and referring them to the proper individuals, as may be undertaken in addition to the procedure now available for this purpose.

I will shortly appoint one member to your Committee from the Army and from the Navy.

The function of your Committee is of great importance in these times of national stress. The methods and mechanisms of warfare have altered radically in recent times, and they will alter still further in the future. This country is singularly fitted, by reason of the ingenuity of its people, the knowledge and skill of its scientists, the flexibility of its industrial structure, to excel in the arts of peace, and to excel in the arts of war if that be necessary. The scientists and engineers of the country, under the guidance of your Committee, and in close collaboration with the armed services, can be of substantial aid in the task which lies before us. I assure you, as you proceed, that you will have my continuing interest in your undertakings.

Very sincerely yours,

June 15, 1940

x813-A  
Mr. William H. McReynolds,  
Secretary,  
The Advisory Commission to the  
Council of National Defense,  
Federal Reserve Building,  
Washington, D. C.

Dear Mac:

I am enclosing copy of a letter I wrote to  
Dr. Vannevar Bush. I wish you could see  
Dr. Bush soon so that his work can be properly  
correlated. I wish also that you would prepare  
an appropriate executive order for me if one is  
needed. A suggested executive order is attached.

Very sincerely yours,

Enclosures



With compliments  
from Leo Szilard

## Neutron Production and Absorption in Uranium

H. L. ANDERSON, E. FERMI AND LEO SZILARD

Reprinted from THE PHYSICAL REVIEW, Vol. 56, No. 3, August 1, 1939

## Neutron Production and Absorption in Uranium\*

H. L. ANDERSON, E. FERMI AND LEO SZILARD  
Columbia University, New York, New York

(Received July 3, 1939)

IT has been found<sup>1-3</sup> that there is an abundant emission of neutrons from uranium under the action of slow neutrons, and it is of interest to ascertain whether and to what extent the number of neutrons emitted exceeds the number absorbed.

This question can be investigated by placing a photo-neutron source in the center of a large water tank and comparing, with and without uranium in the water, the number of thermal neutrons present in the water. In the previous experiments of this type<sup>1,3</sup> it was attempted to have as closely as possible a spherically symmetrical distribution of neutrons. The number of thermal neutrons present in the water was determined by measuring along one radius the neutron density  $\rho$  as a function of the distance  $r$  from the center, and then calculating  $\int r^2 \rho dr$ . A difference in favor of uranium of about five percent was reported by von Halban, Joliot and Kovarski.<sup>4</sup>

Since one has to measure a small difference, slight deviations from a spherically symmetrical distribution might give misleading results. The present experiments which are based on the same general principle do not require such symmetry. In order to measure the number of thermal neutrons in the water we filled the tank with a ten-percent solution of  $\text{MnSO}_4$ . The activity induced in manganese is proportional to the number of thermal neutrons present. A physical averaging was performed by stirring the solution before measuring the activity of a sample with an ionization chamber. To obtain an effect of sufficient magnitude, about 200 kg of  $\text{U}_3\text{O}_8$  was used.

The experimental arrangement is shown in Fig. 1. A photo-neutron source, consisting of about 2 g of radium and 250 g of beryllium was

placed in the center of the tank. The geometry was such that practically all neutrons emitted by the source and by the uranium oxide were slowed down and absorbed within the tank. Each irradiation extended over several half-life periods of radiomanganese and the observed activity of the solution was about four times the background of the ionization chamber. Alternating measurements were taken with the cans filled with uranium oxide, and with empty cans of the same dimensions. The activity proved to be about ten percent higher with uranium oxide than without it. This result shows that in our arrangement more neutrons are emitted by uranium than are absorbed by uranium.

In order to find the average number of fast neutrons emitted by uranium for each thermal neutron absorbed by uranium, we have to determine what fraction of the total number of neutrons emitted by the photo-neutron source is, in our experiment, absorbed in the thermal region by uranium. The number of photo-neutrons

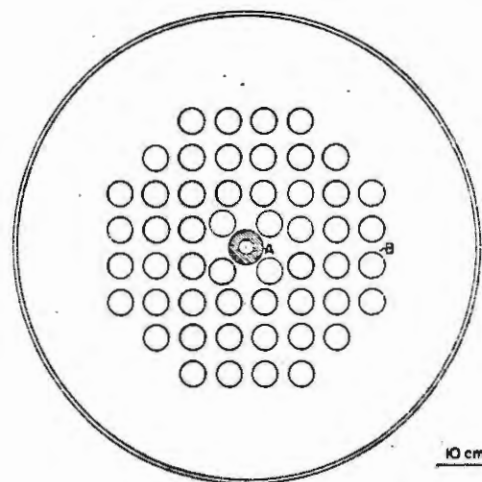


FIG. 1. Horizontal section through center of cylindrical tank which is filled with 540 liters of 10-percent  $\text{MnSO}_4$  solution. A, Photo-neutron source composed of 2.3 grams of radium and 250 grams of beryllium. B, One of 52 cylindrical cans 5 cm in diameter and 60 cm in height, which are either empty or filled with uranium oxide.

\*Publication assisted by the Ernest Kempton Adams Fund for Physical Research of Columbia University.

<sup>1</sup>v. Halban, Joliot and Kovarski, *Nature* **143**, 470 (1939).

<sup>2</sup>L. Szilard and W. H. Zinn, *Phys. Rev.* **55**, 799 (1939).

<sup>3</sup>Anderson, Fermi and Hanstein, *Phys. Rev.* **55**, 797 (1939).

<sup>4</sup>v. Halban, Joliot and Kovarski, *Nature* **143**, 680 (1939).



emitted by the source is indicated by the activity of the solution in the tank when the irradiation is carried out with empty cans surrounding the source. We obtained a measure of this number by taking into account that in our solution about 20 percent of the neutrons are captured by manganese and the rest by hydrogen. In order to obtain, in the same units, a measure of the number of neutrons absorbed by uranium we proceeded in the following way: A mixture of sand and manganese powder, having the same thermal neutron absorption as uranium oxide replaced the uranium oxide in  $\frac{1}{4}$  of the cans which were distributed uniformly among the other uranium oxide-filled cans. After irradiation, all this powder was mixed together, a ten-percent  $\text{MnSO}_4$  solution was prepared from a sample, and its activity was measured with our ionization chamber.

In this way we found that about 50 percent of the neutrons emitted by the source are absorbed as thermal neutrons by uranium in our arrangement. It follows that, if uranium absorbed only thermal neutrons, the observed ten-percent increase in activity obtained with uranium present would correspond to an average emission of about 1.2 neutrons per thermal neutron absorbed by uranium. This number should be increased, to perhaps 1.5, by taking into account the neutrons which, in our particular arrangement, are absorbed at resonance in the nonthermal region by uranium, without causing neutron emission.

From this result we may conclude that a nuclear chain reaction could be maintained in a system in which neutrons are slowed down without much absorption until they reach thermal energies and are then mostly absorbed by uranium rather than by another element. It remains an open question, however, whether this holds for a system in which hydrogen is used for slowing down the neutrons.

In such a system the absorption of neutrons takes place in three different ways: The neutrons are absorbed at thermal energies, both by hydrogen and uranium, and they are also absorbed by uranium at resonance before they are slowed down to thermal energies. Our result is independent of the ratio of the concentrations of hydrogen and uranium, insofar as it shows that, for thermal neutrons, the ratio of the cross

section for neutron production and neutron absorption in uranium is greater than one, and probably about 1.5. What fraction of the neutrons will reach thermal energies without being absorbed will, however, depend on the ratio of the average concentrations of hydrogen and uranium. Since there is an appreciable absorption even far from the center of the resonance band, it follows that the fraction of neutrons absorbed by uranium at resonance will increase with decreasing hydrogen concentration. This has to be taken into account in discussing the possibility of a nuclear chain reaction in a system composed essentially of uranium and hydrogen. A chain reaction would require that more neutrons be produced by uranium than absorbed by uranium and hydrogen together. In our experiment the ratio of the average concentration of hydrogen to uranium atoms was 17 to 1, and in the experiment of von Halban, Joliot and Kovarski this ratio was 70 to 1. At such concentrations the absorption of hydrogen in the thermal region will prevent a chain reaction. By reducing the concentration of hydrogen one would obtain the following effect: On the one hand a larger fraction of those neutrons which reach thermal energies will be absorbed by uranium; on the other hand fewer neutrons reach the thermal region due to an increased absorption by uranium at resonance. Of these two counteracting factors the first is more important for high hydrogen concentrations and the second is more important for low hydrogen concentrations. Starting with high hydrogen concentrations, the ratio of neutron production to total neutron absorption will thus first rise, then pass through a maximum, and, as the hydrogen concentration is decreased, thereafter decrease. We attempted to estimate the quantities involved from the information available about resonance absorption in uranium<sup>5-7</sup> and from the observed net gain of 0.2 in the number of neutrons in our experiment. The effect of the absorption at resonance turns out to be so

<sup>5</sup> Meitner, Hahn and Strassman, *Zeits. f. Physik* 106, 249 (1937).

<sup>6</sup> v. Halban, Kovarski and Savitch, *Comptes rendus* 208, 1396 (1939).

<sup>7</sup> H. L. Anderson and E. Fermi, *Phys. Rev.* 55, 1106 (1939).

large that even at the optimum concentration of hydrogen it is at present quite uncertain whether neutron production will exceed the total neutron absorption. More information concerning the resonance absorption of uranium as well as more accurate measurement of some of the values which enter into our calculation are required before we can conclude whether a chain reaction is possible in mixtures of uranium and water.

We wish to thank Dr. D. W. Stewart, of the Department of Chemistry, and Mr. S. E. Krewer, for advice and assistance in carrying out some of these experiments. We are much indebted to the Eldorado Radium Corporation for enabling us to work with large quantities of uranium oxide in our experiments, and to the Association for Scientific Collaboration for the use of the photo-neutron source and other facilities.

THE WHITE HOUSE  
WASHINGTON

October 13, 1939.

MEMORANDUM FOR

GENERAL WATSON

Will you prepare a nice  
note of thanks to Professor  
Einstein and return his letter  
to Grace for our very con-  
fidential files?

F. D. R.

ONE SOUTH WILLIAM STREET  
NEW YORK

October 11, 1939

Dear Mr. President:

With approaching fulfillment of your plans in connection with revision of the Neutrality Act, I trust that you may now be able to accord me the opportunity to present a communication from Dr. Albert Einstein to you and other relevant material bearing on experimental work by physicists with far-reaching significance for National Defense.

Briefly, the experimentation that has been going on for half a dozen years on atomic disintegration has culminated this year (a) in the discovery by Dr. Leo Szilard and Professor Fermi that the element, uranium, could be split by neutrons and (b) in the opening up of the probability of chain reactions, - that is, that in this nuclear process uranium itself may emit neutrons. This new development in physics holds out the following prospects:

1. The creation of a new source of energy which might be utilized for purposes of power production;
2. The liberation from such chain reaction of new radioactive elements, so that tons rather than grams of radium could be made available in the medical field;
3. The construction, as an eventual probability, of bombs of hitherto unenvisaged potency and scope: As Dr. Einstein observes, in the letter which I will leave with you, "a single bomb of this type carried by boat and exploded in a port might well destroy the whole port together with some of the surrounding territory!"

In connection, then, with the practical importance of this work - for power, healing and national defense purposes - it needs to be borne in mind that our supplies of uranium are limited and poor in quality as compared with the large sources of excellent uranium in the Belgian Congo and, next in line, Canada and former Czechoslovakia. It has come to the attention of Dr. Einstein and the rest of the group concerned with this problem that Germany has actually stopped the sale of uranium from the Czechoslovakian mines it seized. This action must be related to the fact that the son of the German Under-Secretary of State, Karl von Weizsaecker, had been an assistant at the Kaiser Wilhelm Institute in Berlin

to some of the great physicists now resident in this country who are carrying forward these experiments on uranium.

Mindful of the implications of all this for democracy and civilization in the historic struggle against the totalitarianism that has exploited the inventions of the free human spirit, Dr. Szilard, in consultation with Professor E. P. Wigner, head of the physics department of Princeton, and Professor E. Teller of George Washington University, sought to aid this work in the United States through the formation of an association for scientific collaboration, to intensify the cooperation of physicists in the democratic countries - such as Professor Joliot in Paris, Professor Lindemann of Oxford and Dr. Dirac of Cambridge - and to withhold publication of the progress in the work on chain reactions. As the international crisis developed this summer, these refugee scholars and the rest of us in consultation with them unanimously agreed that it was their duty, as well as desire, to apprise you at the earliest opportunity of their work and to enlist your cooperation.

In view of the danger of German invasion of Belgium, it becomes urgent to make arrangements - preferably through diplomatic channels - with the Union Miniere du Haut-Katanga, whose head office is at Brussels, to make available abundant supplies of uranium to the United States. In addition, it is necessary to enlarge and accelerate the experimental work, which can no longer be carried out within the limited budgets of the departments of theoretical physics in our universities. It is believed that public-spirited executives in our leading chemical and electrical companies could be persuaded to make available certain amounts of uranium oxide and quantities of graphite, and to bear the considerable expense of the newer phases of the experimentation. An alternative plan would be the enlistment of one of the foundations to supply the necessary materials and funds. For either plan and for all the purposes, it would seem advisable to adopt the suggestion of Dr. Einstein that you designate an individual and a committee to serve as a liaison between the scientists and the Executive Departments.

In the light of the foregoing, I desire to be able to convey in person, in behalf of these refugee scholars, a sense of their eagerness to serve the nation that has afforded them hospitality, and to present Dr. Einstein's letter together with a memorandum which Dr. Szilard prepared after some discussion with me and copies of some of the articles that have appeared in scientific journals. In addition, I would request in their behalf

taking action along this line it would not be necessary officially to disclose that the uranium content of the ore is the point of interest; action might be taken on the ground that it is of value to secure a stock of the ore on account of its radium content for possible future extraction of the radium for medical purposes.

Since it is unlikely that an earnest attempt to secure a supply of uranium will be made before the possibility of a chain reaction has been visibly demonstrated, it appears necessary to do this as quickly as possible by performing a large-scale experiment. The previous experiments have prepared the ground to the extent that it is now possible clearly to define the conditions under which such a large-scale experiment would have to be carried out. Still two or three different setups may have to be tried out, or alternatively preliminary experiments have to be carried out with several tons of material if we want to decide in advance in favor of one set-up or another. These experiments cannot be carried out within the limited budget which was provided for laboratory experiments in the past, and it has now become necessary either to strengthen - financially or otherwise - the organizations which concerned themselves with this work up to now, or to create some new organization for the purpose. Public-spirited private persons who are likely to be interested in supporting this enterprise should be approached without delay, or alternatively the collaboration of the chemical or the electrical industry should be sought.

The investigations were hitherto limited to chain reactions based on the action of slow neutrons. The neutrons emitted from the splitting uranium are fast, but they are slowed down in a mixture of uranium



and a light element. Fast neutrons lose their energy in colliding with atoms of a light element in much the same way as a billard ball loses velocity in a collision with another ball. At present it is an open question whether such a chain reaction can also be made to work with fast neutrons which are not slowed down.

There is reason to believe that, if fast neutrons could be used, it would be easy to construct extremely dangerous bombs. The destructive power of these bombs can only be roughly estimated, but there is no doubt that it would go far beyond all military conceptions. It appears likely that such bombs would be too heavy to be transported by airplane, but still they could be transported by boat and exploded in port with disastrous results.

Although at present it is uncertain whether a fast neutron reaction can be made to work, from now on this possibility will have to be constantly kept in mind in view of its far-reaching military consequences. Experiments have been devised for settling this important point, and it is solely a question of organization to ensure that such experiments should be actually carried out.

Should the experiments show that a chain reaction will work with fast neutrons, it would then be highly advisable to arrange among scientists for withholding publications on this subject. An attempt to arrange for withholding publications on chain reactions has already been made early in March, but was abandoned in spite of favorable response in this country and in England on account of the negative attitude of certain French laboratories. The experience gained in March would make it possible to revive this attempt whenever it should be necessary.

Leo Szillard  
(Signed)



# MEMORANDUM

Much experimentation on atomic desintegration was done during the past five years, but up to this year the problem of liberating nuclear energy could not be attacked with any reasonable hope for success. Early this year it became known that the element uranium can be split by neutrons. It appeared conceivable that in this nuclear process uranium itself may emit neutrons, and a few of us envisaged the possibility of liberating nuclear energy by means of a chain reaction of neutrons in uranium.

Experiments were thereupon performed, which led to striking results. One has to conclude that a nuclear chain reaction could be maintained under certain well defined conditions in a large mass of uranium. It still remains to prove this conclusion by actually setting up such a chain reaction in a large-scale experiment.

This new development in physics means that a new source of power is now being created. Large amounts of energy would be liberated, and large quantities of new radioactive elements would be produced in such a chain reaction.

In medical applications of radium we have to deal with quantities of grams; the new radioactive elements could be produced in the chain reaction in quantities corresponding to tons of radium equivalents. While the practical application would include the medical field, it would not be limited to it.

A radioactive element gives a continuous release of energy for a certain period of time. The amount of energy which is released per unit weight of material may be very large, and therefore such elements might

be used - if available in large quantities - as a fuel for driving boats or airplanes. It should be pointed out however that the physiological action of the radiations emitted by these new radioactive elements makes it necessary to protect those who have to stay close to a large quantity of such an element, for instance the driver of the airplane. It may therefore be necessary to carry large quantities of lead, and this necessity might impede a development along this line, or at least limit the field of application.

Large quantities of energy would be liberated in a chain reaction which might be utilized for purposes of power production in the form of a stationary power plant.

In view of this development it may be a question of national importance to secure an adequate supply of uranium. The United States has only very poor ores of uranium in moderate quantities; there is a good ore of uranium in Canada where the total deposit is estimated to be about 3000 tons; there may be about 1500 tons of uranium in Czechoslovakia, which is now controlled by Germany; there is an unknown amount of uranium in Russia, but the most important source of uranium, consisting of an unknown, but probably very large amount of good ore, is Belgian Congo.

It is suggested therefore to explore the possibility of bringing over from Belgium or Belgian Congo a large stock of pitchblend, which is the ore of both radium and uranium, and to keep this stock here for possible future use. Perhaps a large quantity of this ore might be obtained as a token reparation payment from the Belgian Government. In

Cong - Nat Dep.

Hotel King's Crown  
420 West 116th Street  
New York City

November 9th, 1939

Dr. Alexander Sachs  
One South William Street  
New York City

Dear Dr. Sachs;

Dr. Fermi and I discussed the question which you have raised. It seems to us that it will be useful to have a small group of physicists, whose residence is not too far from Washington, D.C., consult with each other at regular intervals on questions connected with research on uranium. We attempted to draw up a list of names for this purpose. In our opinion such a list ought to include the following names to which others might be added, if required.

Beams - Charlottesville, Va.  
Fermi - New York  
Furry - Cambridge, Mass.  
Szilard - New York  
Teller - Washington, D.C.  
Tuve - Washington, D.C.  
Wheeler - Princeton.

In drawing up this list we kept in mind two points:

a) the question of residence of the man selected. The geographical boundary line was drawn at the distance Washington to Boston;

b) the advisability of having a number of the more important eastern universities represented, at which research on uranium has been carried on in the past or might be started in the near future.

Furthermore it seems to us that it might be useful to ask certain small groups of workers to consider themselves responsible for clearing up a given aspect of the question and to submit a report within six months' or a year's time. It would be the task of these groups to see to it that the questions involved are vigorously pursued, either by some members of the group or by others. Such a group would be expected to report at once if they encounter difficulties which they are unable to overcome, so that the help of others can be enlisted.

In our opinion the following persons might be asked to report on, and concern themselves with:

1. Slow Neutron Reaction:

Fermi, Pegram, Szilard, Wheeler<sup>(all Columbia)</sup> (Princeton)

2. Fast Neutron Reaction:

Fermi, Szilard, Tuve, Wigner<sup>(Carnegie Inst. Wash.)</sup> (Princeton)

3. The Question which of the Uranium Isotopes splits:

Dunning<sup>(Columbia)</sup>, Fermi, Tuve, Wheeler.

4. Small Scale Separation of Isotopes by any Method except

Diffusion:

Beams<sup>(Univ. Va.)</sup>, Fermi, Tuve.

5. Small Scale Separation of Isotopes by Diffusion:

Fermi, Furry, Urey<sup>(Harvard)</sup> (Columbia)

6. Theoretical Possibility and Limitation of Large Scale Separation by Centrifuging:

Beams, Pegram, Szilard, Teller<sup>(George Wash. Univ.)</sup>

7. Theoretical Possibility and Limitation of Large Scale

Separation by Diffusion:

Fermi, Furry, <sup>(Yale)</sup> Onsager, Urey.

8. Possibility of Large Scale Production of Uranium Metal:

Pegram, Szilard, and somebody from the Department for  
Chemical Engineering of MIT or Columbia.

These groups include the following names:

Beams - University of Virginia,  
Fermi - Columbia,  
Furry - Harvard,  
Dunning - Columbia,  
Pegram - Columbia,  
Onsager - Yale,  
Szilard - Columbia,  
Teller - George Washington University,  
Tuve - Carnegie Institute of Terrestrial Magnetism,  
Urey - Columbia,  
Wheeler - Princeton,  
Wigner - Princeton.

We could not discuss the tentative proposals contained in this letter with Professor Pegram on account of his absence, and the time was too short to discuss it with anybody else.

Yours very sincerely

*Leo Szilard*  
(Leo Szilard)

June 15, 1940

Dr. Karl T. Compton, President, <sup>PP21975</sup>  
Massachusetts Institute of Technology,  
Cambridge, Massachusetts.

My dear Dr. Compton:

In order that scientific research on the mechanisms and devices of warfare may be more completely correlated and supported in the interests of national defense, I am creating a National Defense Research Committee. This will be attached to the Advisory Commission to the Council of National Defense and will be under the chairmanship of Dr. Vannevar Bush. I enclose a copy of a letter to Dr. Bush which explains in some detail the functions of this new committee.

I am happy to appoint you a member of this committee, for I feel sure that you can greatly aid in its deliberations, and thus contribute substantially to an important aspect of national defense.

I trust that you find it possible to accept this appointment, and I will be pleased to be so informed.

If, through the activities of this new committee, the efforts of American scientists throughout the country are effectively oriented in aid of the armed services in the serious problems which today confront them, an important piece of work will have been well accomplished.

Cordially yours,

Enclosure

June 15, 1940

Honorable Conway P. Coe, x3-*κ*  
Commissioner of Patents,  
Department of Commerce,  
Washington, D. C.

My dear Mr. Coe:

In order that scientific research on the mechanisms and devices of warfare may be more completely correlated and supported in the interests of national defense, I am creating a National Defense Research Committee. This will be attached to the Advisory Commission to the Council of National Defense and will be under the chairmanship of Dr. Vannevar Bush. I enclose a copy of a letter to Dr. Bush which explains in some detail the functions of this new committee. ✓

I am happy to appoint you a member of this committee, for I feel sure that you can greatly aid in its deliberations, and thus contribute substantially to an important aspect of national defense.

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Cordially yours,

Enclosure



June 15, 1940

Dr. James Bryant Conant,  
President, Harvard University,  
Cambridge, Massachusetts.

My dear Dr. Conant:

In order that scientific research on the mechanisms and devices of warfare may be more completely correlated and supported in the interests of national defense, I am creating a National Defense Research Committee. This will be attached to the Advisory Commission to the Council of National Defense and will be under the chairmanship of Dr. Vannevar Bush. I enclose a copy of a letter to Dr. Bush which explains in some detail the functions of this new committee.

I am happy to appoint you a member of this committee, for I feel sure that you can greatly aid in its deliberations, and thus contribute substantially to an important aspect of national defense.

I trust that you find it possible to accept this appointment, and I will be pleased to be so informed.

If, through the activities of this new committee, the efforts of American scientists throughout the country are effectively oriented in aid of the armed services in the serious problems which today confront them, an important piece of work will have been well accomplished.

Cordially yours,

Enclosure

June 15, 1940

Dr. Frank B. Jewett, President, x330  
National Academy of Sciences,  
195 Broadway,  
New York City

My dear Dr. Jewett:

In order that scientific research on the mechanisms and devices of warfare may be more completely correlated and supported in the interests of national defense, I am creating a National Defense Research Committee. This will be attached to the Advisory Commission to the Council of National Defense and will be under the chairmanship of Dr. Vannevar Bush. I enclose a copy of a letter to Dr. Bush which explains in some detail the functions of this new committee.

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Cordially yours,

Enclosure

June 15, 1940

Dr. Richard C. Tolman, ×  
California Institute of Technology,  
c/o Fay-Adams House, ×  
Washington, D. C.

My dear Dr. Tolman:

In order that scientific research on the mechanisms and devices of warfare may be more completely correlated and supported in the interests of national defense, I am creating a National Defense Research Committee. This will be attached to the Advisory Commission to the Council of National Defense and will be under the chairmanship of Dr. Vannevar Bush. I enclose a copy of a letter to Dr. Bush which explains in some detail the functions of this new committee. ✓

I am happy to appoint you a member of this committee, for I feel sure that you can greatly aid in its deliberations, and thus contribute substantially to an important aspect of national defense.

I trust that you find it possible to accept this appointment, and I will be pleased to be so informed.

If, through the activities of this new committee, the efforts of American scientists throughout the country are effectively oriented in aid of the armed services in the serious problems which today confront them, an important piece of work will have been well accomplished.

Cordially yours,

Enclosure

FOR THE PRESS

June 17, 1940

The President has named the following to be members  
of the new National Defense Research Committee:

Dr. Vannevar Bush, Chairman  
President, Carnegie Institute of Washington

Dr. J. E. Conant,  
President, Harvard University

Dr. Richard C. Tolman,  
California Institute of Technology

Dr. Karl Compton,  
President, Massachusetts Institute of Technology, Mass.

Hon. Conway P. Coe,  
Commissioner of Patents, Commerce Dept.

Dr. Lyman J. Briggs,  
Director, National Bureau of Standards.

Dr. F. B. Jewett,  
President, National Academy of Sciences, New York City

The Secretary of War

The Secretary of the Navy

June 15, 1940

Dr. Lyman J. Briggs,  
Director - National Bureau of Standards, x3-10  
Washington, D. C.

My dear Dr. Briggs:

A short time ago I asked you to serve as chairman of a committee to study into the possible relationship to national defense of certain aspects of atomistics, notably the fission of uranium.

In order more fully to correlate the scientific efforts of the country with problems of national defense I am now creating a new committee under the chairmanship of Dr. Vannevar Bush, President of the Carnegie Institution of Washington, to be known as the National Defense Research Committee. This committee will be attached to the Advisory Commission to the Council of National Defense and will include representatives of the Army and Navy, and several distinguished scientists. ✓

Since the problem on which you are engaged is a part of this larger picture I am requesting Dr. Bush to arrange to reconstitute your committee as a subcommittee of the National Defense Research Committee with such rearrangement of membership as may prove desirable. I will appreciate it, therefore, if you will now report directly to this new committee. In your new association you will undoubtedly continue to maintain close and direct contact with those officers of the Army and Navy most directly interested in the field of your efforts.

I appreciate the thought and effort which you are devoting to this baffling and intricate matter.

Very sincerely yours,

THE WHITE HOUSE

WASHINGTON

June 18, 1940

FILE MEMO:

Mr. Hassett told me to tell Dr. Vannever Bush (who was asking if he might give out content of the President's letter to him of June 15, 1940 to the newspapermen) that it was O.K. to give it out.

Mr. Hassett read over the President's letter before giving his O.K.

dj

June 15, 1940

My dear Mr. Secretary:

I am enclosing a copy of the note which I wrote today to Dr. Vannevar Bush which is self-explanatory. It is clearly understood between Dr. Bush and me that this does not in any way supplant any existing work now going on in the War Department. Naturally, you will want to cooperate closely with Dr. Bush and his Committee.

It seems advisable to me that after conferences with Dr. Bush and appropriate persons in the War Department an officer be assigned to correlate the work of Dr. Bush and his committee with the War Department.

Very sincerely yours,

The Honorable  
The Secretary of War x25  
Washington, D. C.



4010

June 24, 1940

MEMORANDUM FOR DR. VANNEVAR BUSH:

For your information.

EDWIN M. WATSON  
Secretary to the President

hm

letters from the following persons, accepting membership on the National Defense Research Committee:

Dr. Karl T. Compton, President, Institute of Technology, Cambridge, Mass., 6/20/40 to the President.  
Dr. James B. Conant, President, Harvard University, Cambridge, Mass., 6/19/40 to the President.  
Hon. Conway P. Coe, Commissioner of Patents, Washington, D.C., 6/18/40 to the President.  
Hon. Lyman J. Briggs, Director, National Bureau of Standards, U.S. Dept. of Commerce, 6/18/40 to the President.  
Richard C. Tolman, President, National Academy of Sciences, Washington, D. C., 6/18/40 to the President.  
Frank B. Jewett, National Academy of Sciences, 195 Broadway, NYC, 6/19/40 to the President.

(Mr. Briggs states in his letter that arrangements are being made at once for the committee on atomistics to report to the Research Committee under the chairmanship of Dr. Bush)

THE ASSISTANT SECRETARY OF THE NAVY  
WASHINGTON

27 June 1940

THE WHITE HOUSE  
JUN 28 8 54 AM '40  
RECEIVED

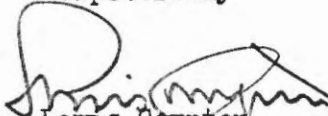
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My dear Mr. President:

Receipt is acknowledged of your letter of 15 June 1940, addressed to the Secretary of the Navy, with which you enclosed a copy of your letter to Doctor Vannevar Bush.

Rear Admiral Harold G. Bowen, U.S.N., has been in communication with Doctor Bush relative to the matter discussed in your letter, and he has been directed to cooperate with the Doctor and his committee.

Respectfully

  
Lewis Compton

The President  
The White House

*file*

76/20/40

WAR DEPARTMENT  
WASHINGTON

4010

June 18, 1940.

MEMORANDUM FOR THE PRESIDENT:

In compliance with your memorandum of  
June 15, 1940, I have designated Brigadier General  
George V. Strong, the Assistant Chief of Staff, War *x25-T*  
Plans Division, as the War Department Advisory  
Member on the National Defense Research Committee  
which is headed by Dr. Vannevar Bush. #

*Harry H. Woodring*  
HARRY H. WOODRING,  
Secretary of War. *x25-*

DSF 5-2-41  
Bush

OFFICE FOR EMERGENCY MANAGEMENT  
OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT  
1530 P STREET NW.  
WASHINGTON, D. C.

VANNEVAR BUSH  
Director

July 16, 1941.

The President,  
The White House,  
Washington, D.C.


Dear Mr. President:

I have the honor to submit herewith a report of operations of the National Defense Research Committee for the first year of its existence during which I was Chairman of the Committee.

This I have purposely made brief. The detailed reports of results obtained from the Committee's activities are placed in the hands of the Army and Navy as rapidly as they are obtained, and the full detailed record is thus available. I have hence confined this summary report to the more important programs, and have treated these generally. I shall of course be glad to extend this report to any extent you may wish.

The scientists of the country realize keenly their responsibilities in the present emergency, where the adequacy of new and sometimes intricate techniques have already profoundly influenced the course of events. They continue to be anxious to put forth their best efforts under your leadership.

Respectfully,



*This page and pp 34, 35*

Franklin D. Roosevelt Library

RECORDED

AEC to Director FDRL

2-12-70

Vannevar Bush,  
Director.

~~CONFIDENTIAL~~

R E P O R T  
of the  
NATIONAL DEFENSE RESEARCH COMMITTEE  
for the  
First Year of Operation  
June 27, 1940 to June 28, 1941

---

Contents

1. Scope of the Committee's activities.
2. Summary of the more important programs of research and development, and progress thereon.
3. Data concerning the Committee's activities:
  - a. Form of organization. p. 37
  - b. Scientific personnel involved. p. 38
  - c. Liaison arrangements with the War and Navy Departments. p. 48
  - d. Provision for interchange with British scientists. p. 53
  - e. Number and distribution of contracts. p. 56
  - f. Summary of financial operations. p. 60
  - g. Order establishing N.D.R.C. p. 61

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DECLASSIFIED

DATE MAR. 5200.9 (9/27/58)

Date- MAY 28 1974

Signature- *WBS*

f. Uranium

Early in the war the question arose whether it might be possible to obtain large sources of power from atomic fission, or even to create an explosive of tremendous power in this manner. The subject is highly abstruse, but one thing is certain: if such an explosive were made it would be thousands of times more powerful than existing explosives, and its use might be determining.

When the Committee was formed there was already in existence, in collaboration with the Navy Department, a special committee under the chairmanship of Dr. Briggs of the Bureau of Standards dealing with this subject. The Committee has continued this work under Dr. Briggs' direction.

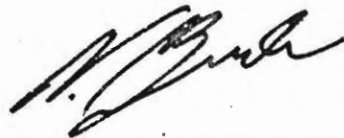
For some time it appeared that the possibility of a successful outcome was very remote. The Committee was faced, on the one hand, with the responsibility of expending public money on what might eventually appear to have been a wild search. On the other hand, it was known that much work on this subject had been done on the continent of Europe, and it was felt to be highly



unsafe not to acquire knowledge concerning the underlying physics of the process. The Committee did not feel justified, in view of the apparently remote chance of success, in diverting to the work the efforts of scientists in considerable numbers, in view of the scarcity of highly qualified physicists for its other important work. It has therefore carried on a careful, but not an elaborate or expensive program.

The subject is too complex for brief summary. There has appeared recently, however, new knowledge which makes it probable that the production of a super-explosive may not be as remote a matter as previously appeared. A program to determine this adequately would be extensive, and expensive in the time of scientists and in direct costs. The subject is being intensively studied in England. The Committee is now making a reexamination of the matter. It is of sufficient importance so that the whole matter should be placed before the President, if this present study indicates any probability that super explosives are possible.

The list of contracts appended\* shows a wide range of effort. Many more programs, while not as extensive as those treated above, might be similarly summarized. The full details are in the hands of the armed services. The Committee will be glad to report to the Commander-in-Chief upon any of these matters, and to the extent that further information is desired.



Vannevar Bush.

---

\* List of contracts, p.56.

FORM OF ORGANIZATIONCommittee Members

Vannevar Bush, Chairman of the Committee, President of the Carnegie Institution of Washington.

Richard C. Tolman, Vice Chairman of the Committee and Chairman of Division A (armor and ordnance), Carnegie Institute of Technology

James B. Conant, Chairman of Division B (bombs, fuels and gases), President of Harvard University

Frank B. Jewett, Chairman of Division C (communication and transportation), President of National Academy of Sciences.

Karl T. Compton, Chairman of Division D (detection, controls and instruments), President of Massachusetts Institute of Technology

Conway P. Coe, Chairman of Division E (patents and inventions), Commissioner of Patents

Brigadier General Richard C. Moore, Deputy Chief of Staff

Rear Admiral Harold G. Bowen, Director of the Naval Research Laboratory

---

Chairman of the Committee on Uranium (Lyman J. Briggs, Director of National Bureau of Standards)

---

Secretary of the Committee (Irvin Stewart, Director of Committee on Scientific Aids to Learning)

NATIONAL DEFENSE RESEARCH COMMITTEE

Vannevar Bush, Chairman  
Richard C. Tolman, Vice Chairman  
Rear Admiral H. G. Bowen  
Conway P. Coe  
Karl T. Compton  
James B. Conant  
Frank B. Jewett  
Maj. General R. C. Moore

Irvin Stewart, Secretary

OFFICE OF THE CHAIRMAN

Vannevar Bush, Chairman  
F. L. Hovde, Tech. Aide  
F. D. Lewis, Tech. Aide  
John Howard, Consultant  
C. L. Wilson, Liaison Officer  
F. S. Cooper, Asst. Lia. Of.  
C. P. Haskins, Asst. Lia. Of.

Committee on Uranium

L. J. Briggs, Chairman

Members:

J. W. Beams  
Gregory Breit  
Ross Gunn  
G. B. Pegram  
M. A. Tuve  
H. C. Urey

Consultant:

P. H. Abelson

OFFICE OF THE SECRETARY

Irvin Stewart, Secretary to Committee  
B. Thompson, Jr., Attorney  
C. Norcross, Sr. Administrative Officer  
C. Covington, Chief of Contract Section  
M. L. Faris, Administrative Aide

RECEIVED  
JUN 1 1941

Bush

OFFICE FOR EMERGENCY MANAGEMENT  
OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT  
1550 P STREET NW.  
WASHINGTON, D.C.

July 16, 1941.

The President,  
The White House,  
Washington, D.C.

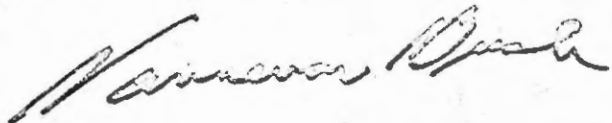
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Respectfully,



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*This page*

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AEC & Director FDRL

2-12-70

REPORT  
of the  
NATIONAL DEFENSE RESEARCH COMMITTEE  
for the  
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For a complete copy of this NDRC report

see

PSF Safe File: Bush

11 October 1941

Letter from Roosevelt to Churchill, dated 11 October 1941

October 11, 1941.

My dear Mr. Churchill:-

It appears desirable that we should soon correspond or converse concerning the subject which is under study by your MAUD committee, and by Dr. Bush's organization in this country, in order that any extended efforts may be coordinated or even jointly conducted. I suggest, for identification, that we refer to this subject as MAUDSON.

I send this message by Mr. Hovde, head of the London office of our scientific organization, as he can, if necessary, identify the subject more explicitly, or answer your questions concerning the form of organization by which it is now being handled in this country.

With every good wish,

Always sincerely,

The Honorable  
Winston Churchill,  
Prime Minister of Great Britain,  
10 Downing Street,  
London,  
England.

Private

DRAFT OF LETTER

The Honorable Winston Churchill,  
10 Downing Street,  
London, England.

My dear Mr. <sup>Winston</sup>Churchill:

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Very sincerely yours,



THE WHITE HOUSE  
WASHINGTON

CONFIDENTIAL  
October 11, 1941.

MEMORANDUM FOR DR. VANNEVAR BUSH

I have sent the letter, as you suggested, and I suggest we fill in the blank, not with a letter of the alphabet, but with the word "Maudson".

I enclose the letter to Mr. Churchill with that notation in it.

Is this all right?

*FDR*  
F. D. R.

REGRADED  
UNCLASSIFIED

C O P Y *Bot*

FROM THE OFFICE OF

V. BUSH

October 13, 1941.

MEMORANDUM FOR THE PRESIDENT:

Unless you instruct otherwise, I will change the code word in the letter from Maudson to Mayson. On Friday I will seal it, and deliver it to Hovde, with explicit instructions. He will leave by plane Monday or very soon thereafter.

I suggest the change because I fear that the word Maud may convey too much. Someone may know on what the Maud Committee is working.

(Signed) V. B.  
V. Bush

O. K.

F. D. R.

WASHINGTON  
THE WHITE HOUSE

THE WHITE HOUSE  
WASHINGTON

~~CONFIDENTIAL~~

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- FDR

GENERAL SERVICES ADMINISTRATION

National Archives and Records Service

FRANKLIN D. ROOSEVELT LIBRARY  
HYDE PARK, N. Y.

Papers of President Franklin D. Roosevelt



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**GENERAL SERVICES ADMINISTRATION**

*National Archives and Records Service*

FRANKLIN D. ROOSEVELT LIBRARY  
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Papers of President Franklin D. Roosevelt



Private

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10 Downing Street,  
London, England.

My dear Mr. <sup>Winston</sup> Churchill:

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Very sincerely yours,

GENERAL SERVICES ADMINISTRATION

National Archives and Records Service



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HYDE PARK, N. Y.

Papers of President Franklin D. Roosevelt

THE WHITE HOUSE  
WASHINGTON

~~CONFIDENTIAL~~  
October 11, 1941.

MEMORANDUM FOR DR. VANNEVAR BUSH

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F. D. R.

- FDR

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Always sincerely,

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*Private*

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6,7,8  
Map Room - Bu  
COPY *Bart*  
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V. BUSH

October 13, 1941.

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V. Bush

O. K.

F. D. R.

GENERAL SERVICES ADMINISTRATION

National Archives and Records Service

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HYDE PARK, N. Y.

Papers of President Franklin D. Roosevelt

Map Room - WSC-FDR Box 1

# Churchill & Roosevelt

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## The Complete Correspondence

### I. Alliance Emerging

OCTOBER 1933 – NOVEMBER 1942

EDITED WITH  
COMMENTARY BY

Warren F. Kimball

Princeton University Press, Princeton, New Jersey

- C-133x**, Nov. 26. Indicates concern that the Chinese are not receiving enough aid.
- C-134x**, Nov. 27. Acknowledges R-70x.
- C-135x**, Nov. 30. Suggests the best way to restrain Japan would be an announcement that Roosevelt will ask for a declaration of war if their aggression continues.
- C-136x**, Dec. ? Indicates British willingness to cooperate on atomic research (MAYSON).
- C-137x**, Dec. 7. Asks for Roosevelt's comments on the proposed draft declaration from Britain and the British Commonwealth to Japan.
- C-R/tel.-2**, Dec. 7. Summary of a telephone call from Churchill to Roosevelt after the Pearl Harbor attack.
- R-71x**, Dec. 8. Asks Churchill to delay asking for a declaration of war against Japan until after Roosevelt speaks to Congress to make a similar request; approves of Churchill's message to the Irish government.
- R-72x**, Dec. 8. Reports U.S. declaration of war against Japan.
- C-138x**, Dec. 9. Suggests a conference between himself and Roosevelt (ARCADIA).
- C-139x**, Dec. 10. Dismisses question of personal danger and reiterates desire for a meeting with Roosevelt.
- R-73x**, Dec. 10. Agrees to a meeting with Churchill in Washington; assures that production and allocation problems can be worked out.
- R-73x/A**, not sent; Dec. 10. Asks for a delay of a few weeks before any meeting while an assessment is made of the new situation following the Japanese attack.
- R-73x/B**, not sent; Dec. 10. Suggests one week delay before any meeting.
- C-140x**, Dec. 11. Asks United States not to break its relations with Vichy France.
- C-141x**, Dec. 12. Asks Roosevelt to divert U.S. transports carrying British troops to Bombay instead of Middle East.
- R-74x**, Dec. 12. Informs Churchill that his request in C-141x has been followed.
- C-142x**, Dec. 18. Forwards a proposed agenda for their upcoming meeting.
- C-143x**, Dec. 18. Accepts Roosevelt's invitation to stay at the White House.
- C-144x**, Dec. 21? Gives estimated time of arrival in the United States and suggests additional transportation arrangements.
- C-145x**, Dec. 16-20. Four long reports from the Prime Minister assessing the strategic situation on all fronts.

by encroachment without having before her fairly and squarely the dire character of a further aggressive step. I beg you to consider whether, at the moment which you judge right which may be very near, you should not say that "any further Japanese aggression would compel you to place the gravest issues before Congress" or words to that effect. We would, of course, make a similar declaration or share in a joint declaration, and in any case arrangements are being made to synchronize our action with yours. Forgive me, my dear friend, for presuming to press such a course upon you, but I am convinced that it might make all the difference and prevent a melancholy extension of the war.

[PSF:GB:WSC\*. WSC, III, 599. *Pearl Harbor Attack*, pt. 14, p. 1300. R&C.]

Ultimately of more importance than the cables which sped across the Atlantic in December 1941 was this letter in which Churchill formally agreed to work with the United States in developing the atomic bomb. Frederick L. Hovde, in charge of the London branch of the Office of Scientific Research and Development, had already begun discussions on such cooperation with Home Secretary Sir John Anderson and with Churchill's scientist in residence, Lord Cherwell (Frederick Lindemann).

### C-136x, letter

London  
December, 1941

Private

My dear Mr. President,

Thank you so much for your letter of October 11 on the subject of MAYSON [R-62x].

I need not assure you of our readiness to collaborate with the United States Administration in this matter. I arranged for Mr. Hovde to have a full discussion with the Lord President (Sir John Anderson) and Lord Cherwell, and I hope it will be possible for them shortly to hand him a detailed statement for transmission to America. [Copy initialed] W.S.C.

[PREM 3/139/8A/570]

The Churchill-Roosevelt channel apparently lay unused during the first week in December, but the two were in regular contact via third parties. Anthony Eden and Alexander Cadogan both mention messages sent via Lord Halifax on December 4 and 5 in which the President finally agreed to a joint Dutch, British, and American warning to Japan that any attack on Thailand, Malaya, or the Dutch East Indies would have the most serious consequences (Eden,

---

I have seen  
J Miller



THE WHITE HOUSE  
WASHINGTON

January 13, 1942.

**SECRET**  
MEMORANDUM FOR THE  
DIRECTOR OF THE BUDGET,  
  
FOR RECOMMENDATION.

F.D.F.

Letter to the Pres. from Vannevar Bush,  
Director of Office of Scientific Research  
and Development 1/9/42 re Civilian  
Scientific Corps and the mobilization of  
same.

GENERAL SERVICES ADMINISTRATION



*National Archives and Records Service*

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Papers of President Franklin D. Roosevelt

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file  
Confidential

THE WHITE HOUSE  
WASHINGTON

March 11, 1942.

MEMORANDUM FOR DR. VANNEVAR BUSH

I am greatly interested in your report of March ninth and I am returning it herewith for your confidential file. I think the whole thing should be pushed not only in regard to development, but also with due regard to time. This is very much of the essence. I have no objection to turning over future progress to the War Department on condition that you yourself are certain that the War Department has made all adequate provision for absolute secrecy.

F.D.R.

From the Office of

*file*  
V. BUSH *file*

March 16, 1942.

Mr. Rudolph Forster,  
The White House,  
Washington, D.C.

I hand you a report for the President. It contains secret and confidential material which should be securely guarded, for much is here summarized.

*5*  
I have thus far transmitted no copies of this report, and I will appreciate it if you will advise me if the President indicates his wishes in this regard. He may wish to see me to have certain points expanded, and, if so, I am always at his call. This week I plan to be in New York on Wednesday and Thursday, but I can always cancel when needed.

*V.B.*

V. Bush.

THE WHITE HOUSE  
WASHINGTON

March 20, 1942.

MEMORANDUM FOR

DR. VANNEVAR BUSH

I have read your extremely interesting report and I agree that the time has come for a review of the work of the Office on New Weapons. I think you had better go ahead and work this out with the Chief of Staff and Chief of Naval Operations -- confining the whole thing to a very small number of people.

I am returning the report for you to lock up, as I think it is probably better that I should not have it in my own files.

F. D. R.

SECRET

OFFICE FOR EMERGENCY MANAGEMENT

OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT

1530 P STREET NW.

WASHINGTON, D. C.

VANNEVAR BUSH  
Director

March 16, 1942.

Franklin D. Roosevelt Library

DECLASSIFIED

AEC to Director FDRL  
2-12-70

The President,  
The White House,  
Washington, D.C.

Dear Mr. President:

I transmit herewith a report on the operations of the Office of Scientific Research and Development.

This consists of a brief statement of the status of research on new weapons in various fields. The opinions expressed in regard to relative importance and promise are my own, not the results of study by a group. Medical research is summarized very briefly: the principal point here is that the work is proceeding entirely harmoniously. Appendices give the usual summaries of organization and operations.

Nearly all of the relations of my Office with the Armed Services are on the tactical level, and are cordial and effective on this basis. Much is being done. In my opinion, however, the time has come for a complete review of the work of this Office on new weapons, for the scientists of the country skilled in the necessary ways are limited in number. This review should be on the strategic level, to determine emphasis and be sure that striking opportunities are not being overlooked or inadequately pushed. If there are steps which you wish me to take in order to bring this about, or if you would care to have me express more completely my thoughts on the matter, I await your instructions.

Respectfully yours,



V. Bush,  
Director.

From the Office of

V. BUSH

*PST*  
*filed*  
*V. Bush*  
April 23, 1942.

Mr. Forster:

These are films of the "amphibious jeep". I think the President, when he has a moment to relax, may enjoy seeing them. They are confidential, of course, but not extremely so, for the vehicle itself has been seen on the road and there was a brief statement about it released by the Army.

This is one of the fastest jobs on record. My group were turned loose on it about December 10, and by March 10 we had a finished vehicle on test, and it is now under production.

One would expect that, when a jeep is made to swim, it would become a poor land vehicle. Quite the contrary, the amphibious jeep outperforms the ordinary jeep on land. Also it does well in surf, as the film shows.

Uses are of course being held closely confidential. Please tell the President, however, that the British Commandos know all about it, and are following it closely.

My group of engineers is now busy making other things swim.

*V. Bush*

THE WHITE HOUSE

OFFICE FOR EMERGENCY MANAGEMENT

OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT

1530 P STREET NW.  
WASHINGTON, D. C.

VANNEVAR BUSH  
Director

May 7, 1942.

Honorable Franklin D. Roosevelt,  
The White House,  
Washington, D.C.

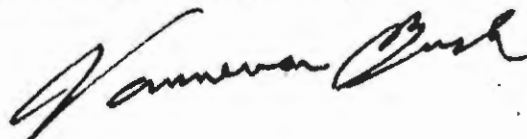
Dear Mr. President:

By action of the Joint U. S. Chiefs of Staff there has been set up a Joint Committee on New Weapons and Equipment charged with the duty of preparing directives for the Joint U. S. Chiefs of Staff concerning development of new weapons, and advising concerning new weapons in connection with strategical planning. I feel sure, from your message to me at the time of submission of my last report, that this will meet your full approval and that I will be acting in accordance with your wishes in accepting membership on this Committee. The other members will be Rear Admiral Lee, head of the Readiness Section of the Navy, and Brigadier General Moses, Assistant Chief of Staff, G-4, of the Army. I believe the move is highly significant and capable of being of genuine aid in the war effort.

Since I report directly to you, it will complete the file if I may have your instructions in this connection, and I have taken the liberty of preparing a draft which I enclose.

The subject designated as Mayson has been discussed with General Marshall, and I believe should be in such form as to be turned over to the Army and increased in scope within a few months. Unless you instruct otherwise, I will apprise my colleagues on the new Committee of its status.

Respectfully yours,



Vannevar Bush, Director,  
Office of Scientific Research and Development.



4946

7

May 8, 1942

My dear Dr. Bush:

This will acknowledge your letter  
of May seventh concerning the new Joint Com-  
mittee on New Weapons and Equipment, set up #  
by directive of the Joint U. S. Chiefs of  
Staff. Your acceptance of membership on  
this Committee meets with my approval.

x5014

Very sincerely yours,

FRANKLIN D. ROOSEVELT

xw.c.  
x4482  
Dr. Vannevar Bush,  
Director, Office of Scientific  
Research and Development,  
1530 F Street, Northwest,  
Washington, D. C.

hm

DRAFT OF LETTER

May , 1942.

Dr. Vannevar Bush, Director,  
Office of Scientific Research and Development,  
1530 P Street, N.W.,  
Washington, D.C.

Dear Dr. Bush;

This will acknowledge your letter of May 7th concerning the new Joint Committee on New Weapons and Equipment, set up by directive of the Joint U.S. Chiefs of Staff. Your acceptance of membership on this Committee meets with my approval.

Sincerely yours,

From the Office of  
V. BUSH

*file format*  
PST. V. Bush Folder  
Subj. File  
June 24, 1942.

Mr. Forster:

The accompanying memorandum  
is in reply to the memorandum from  
the President to me of yesterday,  
reading "Do you have the money?".

*V.B.*

V. Bush.

~~CONFIDENTIAL~~

June 24, 1942.

MEMORANDUM FOR THE PRESIDENT:

We have the money. The Army plans to use available funds to be later replaced.

Arthur Compton has plenty of reason for being excited, but like many a scientist is not noted for staying in channels. He is getting results, however, and I hope he gets them fast enough.

*V.B.*

V. Bush.

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DECLASSIFIED AEC to  
Director, 2-12-70

Bush Folder

THE WHITE HOUSE  
WASHINGTON

June 23, 1942.

~~CONFIDENTIAL~~

MEMORANDUM FOR DR. VANNEVAR BUSH:

Do you have the money?

F.D.R.

Copy of the Vice President's letter attached for our files, original sent with telegram from Arthur H. Compton to the Vice President "I suspect Bush is having trouble getting suitable financing of work we have discussed. Have strong evidence Germans will have this weapon ready for use in 1943? If we are not similarly ready this would mean disaster. Can see no safety from this threat short of all out effort to develop counter measures. Please check with Bush to ensure making such effort possible." from Pittsburgh, Penna.

June 20, 1942

The President

The White House

Dear Mr. President:

You might take the enclosed wire from Arthur Compton into account along with the report submitted to you by Vannevar Bush and signed by myself and the Secretary of War.

Respectfully yours,

H. A. Wallace

Enclosure

THE WHITE HOUSE  
WASHINGTON

July 11, 1942.

~~CONFIDENTIAL~~  
MEMORANDUM FOR DR. VANNEVAR BUSH:

I do not think I have replied to yours of June 19th in relation to the purchase of certain ore in Canada. I agree with you that we should encourage the Canadians to go ahead.

Also, I wholly approve your patent control policy.

I talked with Mr. Churchill in regard to this whole matter and we are in complete accord.

F.D.R.

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DECLASSIFIED

AEC to Director, FDRL

2-12-70



OFFICE FOR EMERGENCY MANAGEMENT  
OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT  
1530 P STREET NW.  
WASHINGTON, D. C.

VANNEVAR BUSH  
Director

June 19, 1942.

The President,  
The White House,  
Washington, D.C.

Franklin D. Roosevelt Library  
**DECLASSIFIED**

AEC to Director, FDR  
2-12-70

Dear Mr. President:

The program of very confidential nature which you initialled on the seventeenth is now being put into effect. In accord with our policy, I am informing the British of our technical and organizational plans, and they will presently send to me the program which they are just now considering. I feel sure these two plans will fit together adequately.

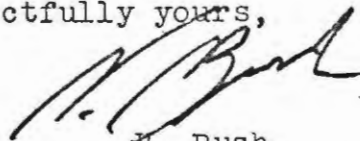
In this connection I have occasionally been consulted by the British concerning after-the-war relationships on this matter, and my reply has always been that you will presumably discuss these with Mr. Churchill. These relationships may be of exceedingly great importance, for one thing because of the power production aspects.

On one point, however, I would like to be in a position to give a reply. The Canadians are considering quietly purchasing the principal ore source in Canada so that it will be under their government control. The British seem to approve this move, but ask our reactions. I am inclined to encourage them to go ahead, with the thought that international relationships will be more readily handled if control of the matter is in government hands. Do you wish me to indicate that such a step would be considered appropriate?

With this same thought in mind, I am providing for adequate records of our research on the basis of which patents can later be prepared, and I intend to see to it, so far as possible, that these are assigned outright to the United States Government. Unfortunately, complete patent control may not be possible in this way, but sufficient may be obtained so that the method could not be applied in peace time except under government license.

Otherwise, I will take steps on control of the matter, or on international relationships concerning it, only as you may direct.

Respectfully yours,

  
V. Bush,  
Director.



10, Downing Street,  
Whitehall,

PRIVATE AND PERSONAL

MR. H. HOPKINS.

You asked me to send you a  
reminder about Tube Alloys -  
disclosure of information to United  
Kingdom and Canada.

*J. H. H. H.*

25. 1. 43

GENERAL SERVICES ADMINISTRATION  
The National Archives



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Three Centimeters

FROM THE PAPERS OF  
HARRY L. HOPKINS

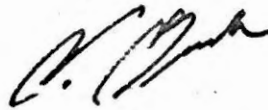
(39)

Office of  
V. BUSH

February 2, 1943.

Mr. Forster:

If this is what the President wants, and I think it is, I'll see that it gets done. The Army is agreeable to doing it this way. I judge the President will probably initial and return my note, so that I will have definite instructions to proceed.



V. Bush.

P  
Y

*The original of this letter is retained at  
Dr. Bush's apartment in Washington.*

Office for Emergency Management  
OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT  
1530 P Street NW  
Washington, D.C.

*2/2/43  
V. Bush*

February 2, 1943

The President,  
The White House,  
Washington, D. C.

Dear Mr. President:

This memorandum is in response to your note of December twenty-eighth, in which you ask that I indicate how you might appropriately approach the Budget in connection with the special program which you authorized at that time.

My suggestion is that you direct the Army to include the matter with its other requests for appropriation as a contingent percentage for reserves for one of the larger items. No detailed justification would be submitted, but a general justification could be made confidentially to the Chairman of each Appropriation Committee and to the Director of the Bureau of the Budget.

If you wish the matter handled in this way, I will be glad to so inform the appropriate officers in the Army.

Respectfully yours,

(Signed) V. BUSH

V. Bush,  
Director.

"V. B.  
O.K.  
F.D.R."

REMINO MR. HOPKINS TO SPEAK TO  
GENERAL SOMERVELL ON THIS  
NEXT THREE OR FOUR DAYS

2/19/43

~~SECRET~~  
Franklin D. Roosevelt Library

DECLASSIFIED

AEC to Director FORL

2-12-76

From: London  
To: President of the United States

Unnumbered February 16, 1943.

Prime Minister to Mister Harry Hopkins, personal and ~~SECRET~~  
(signed Prime).

Do you remember our conversation about that very secret matter we called "Tube Alloys" which you told me would be put right as soon as the President got home? I should be very grateful for some news about this, as at present the American War Department is asking us to keep them informed of our experiments while refusing altogether any information about theirs.

PRIME

~~SECRET~~



DECLASSIFIED

AA to Director PORL

2-12-70

~~SECRET~~

FEBRUARY 24, 1943.

TELEGRAM

TO: THE PRIME MINISTER

FROM: HARRY L. HOPKINS

Appropo of your request to me regarding tube alloys, I have made some inquiry here. It would be very helpful if Anderson could send me by pouch a full memorandum of what he considers to be the basis of the present misunderstanding, particularly the copies of the original memoranda or any references or conversations which form the bases of the misunderstanding. In a casual inquiry here I find that our people feel that there has been no breach of agreement, but I want to go into it thoroughly and a memorandum from Anderson would help.

I do hope you are feeling better.

~~SECRET~~



OFFICE FOR EMERGENCY MANAGEMENT  
OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT  
1530 P STREET NW.  
WASHINGTON, D. C.

VANNEVAR BUSH  
Director

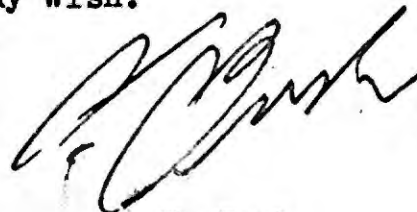
February 26, 1943.

MEMORANDUM FOR MR. HARRY HOPKINS:

Following our conversation, I have gathered together the material from my file bearing on interchange with the British. I enclose it, although I doubt whether you will care to go over it in detail, as it does not give a clear definition of where we stand. In fact, it seems to me that interchange needs to be considered in three ways: first, on scientific research; second, on military devices themselves; and third, on the manufacturing processes involved in making them. My Office is primarily concerned with the first. The matter that we discussed is now in military channels and concerned with the second and third. There may of course be other documents that I do not know of.

I judge that the full documents will be found to be somewhat general, however, and that procedure has been established largely by practice in interpretation. The practice has certainly not been to exchange without any limit whatever. To pick one example, the British have a Whittle engine development where they have told us something about the properties of the device but have declined to let the committee on this subject in the NACA have the full details. Their reason is the desire for high security. The committee in question contains representatives of industrial organizations. This particular case, where interchange has been interpreted by them in a restricted fashion, seems to me to be parallel in many respects with the case which we considered. I judge that on this matter, as far as the properties of the weapon and its utilization are concerned, the approach would be through regular military channels.

I will be glad to delve into this whole matter with you further whenever you may wish.



V. Bush,  
Director.

~~SECRET~~  
Franklin D. Roosevelt Library

DECLASSIFIED

AEC to Director FDRL

2-12-70

From: London  
To: The President of the United States

Unnumbered, March 20, 1943

From Prime Minister to Mister Harry Hopkins personal and

~~SECRET~~  
I am hoping to receive a reply to my telegram to you of February 27 about tube alloys. Time is passing and collaboration appears to be at a standstill. We have made some progress in the last three months.

Prime

~~SECRET~~

DECLASSIFIED

AEC to Director FDRL  
2-12-70

FROM: Washington  
TO: The Prime Minister

March 20, 1943

From Mr. Harry L. Hopkins to the Prime Minister  
personal and ~~most secret~~

We have been having very satisfactory talks  
with Eden.

I am working on tube alloys and will let you  
know as soon as I know something definite.

We are looking for good news from Tunisia and  
I think we are going to get it.

All well here

Harry

From the Office of

V. BUSH

Dear Harry—

You will probably  
wish to confer on  
this, and Conrad  
and I will stand  
by.

A. B.

Mar 31.

Tube all  
M N N

Apr. 7th

Apr 14/13



( 12 )

OFFICE FOR EMERGENCY MANAGEMENT  
OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT  
1530 P STREET NW.  
WASHINGTON, D. C.

VANNEVAR BUSH  
Director

March 31, 1943.

Franklin D. Roosevelt Library

MEMORANDUM

**DECLASSIFIED**

*AEC to Director FORL*  
*2-12-70*

TO: Mr. Harry Hopkins.  
FROM: V. Bush.  
RE: Interchange on S-1.

On March twenty-fourth the President passed me the accompanying file on interchange with the British on S-1, and instructed me to prepare a reply, undoubtedly by suggesting material for a reply to you, since the attached cables are marked for your attention.

There is no longer any assertion of breach of agreement. The objection of the British must hence be either to the adopted policy or to the way in which it is being applied. I have discussed this matter again with the Military Policy Committee on the subject, and briefly with Secretary Stimson. None of us can see that the present policy, which was approved by the President after it had had the careful review and approval of General Marshall, Secretary Stimson, and Vice President Wallace, is in any way unreasonable, or such as to impede the war effort on this matter. Neither can we see that the application is at present unwise. I believe, therefore, that it will be necessary to determine more explicitly why the British object, before any modification could be recommended. It is true, as indicated in the last paragraph of CCWD 1744, that a prompt resolution of this matter is desirable. However, the present unwillingness of the British to conduct certain scientific interchange, to which we have invited them, merely means that our scientists do not have for the moment the benefit of their collaboration in the studies constantly being conducted. This is of much less importance than a clear understanding on a matter of the unique significance of this. I will therefore review the policy and its application, and I suggest that you request the British for explicit criticism.

The adopted policy is that information on this subject will be furnished to individuals, either in this country or Great Britain, who need it and can use it now in the furtherance of the war effort, but that, in the interests of security, information interchanged will be restricted to this definite objective.

There is nothing new or unusual in such a policy. It is applied generally to military matters in this country and elsewhere. To step beyond it would mean to furnish information on secret military matters to individuals who wish it either because of general interest or because of its application to non-war or post-war matters. To do so would decrease security without advancing the war effort.

The application of this principle is in no way unilateral. In applying the policy in this instance full over-all information has been withheld, for example, from our own Naval Research Laboratory. This has been done with the concurrence of appropriate Naval authority, and in spite of the fact that the Naval Research Laboratory would like to have full information. That laboratory, like other laboratories engaged on the subject, is furnished with all the technical information necessary for full progress on the part of the program which it is carrying forward. To go further would decrease security, and security on this subject is important. In this connection it should be remembered that the Naval Research Laboratory was engaged on aspects of this research very early, in fact I believe as early as any group anywhere, under the guidance of a special committee appointed by the President. This committee was reorganized under NDRC when the latter was formed.

This same policy is applied throughout the OSRD organization. The principle is that no individual receives secret information except as it is necessary for his proper functioning in connection with his assigned duties. It is used by the British themselves, and they occasionally ask us to apply special restrictions on information they furnish us, beyond current practice, when especially secret matters are involved.

I find it hard to believe, therefore, that the present British objection is to the policy. However, the last two paragraphs of CCWD 1807 Z are very pertinent in this connection. The first of these states the principle, and the second states that the application made is a logical result of the principle. It then goes on to say that this "destroys the original conception of 'a coordinated or even jointly conducted effort between the two countries'." If the application is logical, then the objection must be to the principle itself. To step beyond this principle would, however, involve giving information to those who could use it, not for the best prosecution of the war effort, but rather for other purposes, such as after-the-war commercial advantages.

I have to conclude, therefore, that the British objection arises because of our withholding information which they consider might be of value in connection with their post-war situation. If that is really their position, then presumably it should be duly considered in connection with the entire post-war relationship between the two countries. It should be considered on its merits, and in due perspective to other relations. To transmit such information for such a purpose would involve our giving to Great Britain information obtained by this country as a result of great expense and effort, and, while we freely transmit for the purpose of furthering our joint war effort, we can hardly give away the fruits of our development as a part of post-war planning except on the basis of some over-all agreement on that subject, which agreement does not now exist. The proper conduct of the secure development of a potentially important weapon should not be modified to produce this further result simply as an incident. In this connection I draw your attention to the enclosed memorandum by Dr. Conant.

My recommendation, therefore, is that the reply to the appended telegrams should attempt to fix the issue upon this point, if this is indeed, as I am inclined to believe, the point which is primarily in the mind of the British, in order that it may be considered in due time in connection with the broad problem of post-war relationships.



Specific points of application of the principle other than this are not, I believe, prominently in the British mind. However, it will be well to review them briefly; for they are consistent with the policy, applicable without distinction to UK and US groups, and, I believe, reasonable, and adapted to best progress with due regard to security.

There has been, from the beginning, full scientific interchange wherever scientific groups are working, in the two countries, on the same aspect of the subject. This it is proposed to continue. Recent failure to do so has been due entirely to British refusal thus to collaborate, while a policy to which they object stands.

Thus, there is a group in Chicago working on one part of the program, and a group on the same phase is being formed in Canada. We proposed complete scientific interchange between these groups as far as scientific research is concerned, but not on the details of the manufacturing process which we alone are prepared to carry on. Similarly there are groups on the scientific aspects of diffusion, and we proposed continued interchange here on a similar basis.

On the other hand, we have long worked at California on an electromagnetic process, and the British have not worked along these lines. We see no need for furnishing them information on our scientific results on this phase. They do not, I feel, object. They could not use such information, and our scientific group on this phase is fully adequate, and now includes as many scientific men as should work on this phase, at the expense of other scientific phases of the war effort.

We propose shortly to gather a special scientific group at an isolated site to work on some of the phases involved in actual bomb construction. It is essential that this be kept from the enemy at all costs. It is exceedingly difficult in this field, where the general background was known to all sorts of scientists all over the world before the work was brought under control, to secure adequate secrecy. Hence we propose to isolate this

group, by special measures, from the rest of the world, including the bulk of our own scientists and of British scientists. However, we are quite willing to invite a British scientist or two to join the group, and have so indicated, provided they will render themselves subject to the same rigid control, for a period which may be several years, as apply to the American scientists that we invite.

We are now erecting manufacturing plants. The information gathered in reducing the manufacture to practice will be extensive, and many inventions will result in patent applications assigned to the United States Government. This is being handled through American companies in which we have confidence. We do not propose to make these manufacturing plans available to any group, British or American, unless it is fully necessary thus to extend information in order to maintain full speed. British commercial interests would like to have these plans, and an account of the operations of plants. So would, undoubtedly, various American companies that are not bound under contract to extend patent rights to the U. S. Government on any invention made by them in this connection.

Finally, there is the matter of military use. This will not come into question for some time. If the war is not of long duration, if there is no danger that the method may be used against us with disastrous results, it may never come into question. When it does, there will undoubtedly be set up special military channels for appropriate consideration of strategy, tactics, and use. I feel sure there is no concern in the minds of the British on this point.

In conclusion, before making a final reply, it is my recommendation that you again state the case briefly, and inquire where the specific objection now rests.

A handwritten signature in dark ink, appearing to be 'A. Bush', located at the bottom right of the page.

From the Office of

V. BUSH

Dear Harry —

You will probably  
wish to confer on  
this, and Conrad  
and I will stand  
by.

V.B.

Mar 31.

Tube all

11 N N

Apr. 7th

14/13

12

OFFICE FOR EMERGENCY MANAGEMENT  
OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT  
1530 P STREET NW.  
WASHINGTON, D. C.

VANNEVAR BUSH  
Director

March 31, 1943.

Franklin D. Roosevelt Library

MEMORANDUM

~~DECLASSIFIED~~

*ACC to Director FORL  
2-12-70*

TO: Mr. Harry Hopkins.  
FROM: V. Bush.  
RE: Interchange on S-1.

On March twenty-fourth the President passed me the accompanying file on interchange with the British on S-1, and instructed me to prepare a reply, undoubtedly by suggesting material for a reply to you, since the attached cables are marked for your attention.

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The adopted policy is that information on this subject will be furnished to individuals, either in this country or Great Britain, who need it and can use it now in the furtherance of the war effort, but that, in the interests of security, information interchanged will be restricted to this definite objective.

There is nothing new or unusual in such a policy. It is applied generally to military matters in this country and elsewhere. To step beyond it would mean to furnish information on secret military matters to individuals who wish it either because of general interest or because of its application to non-war or post-war matters. To do so would decrease security without advancing the war effort.

The application of this principle is in no way unilateral. In applying the policy in this instance full over-all information has been withheld, for example, from our own Naval Research Laboratory. This has been done with the concurrence of appropriate Naval authority, and in spite of the fact that the Naval Research Laboratory would like to have full information. That laboratory, like other laboratories engaged on the subject, is furnished with all the technical information necessary for full progress on the part of the program which it is carrying forward. To go further would decrease security, and security on this subject is important. In this connection it should be remembered that the Naval Research Laboratory was engaged on aspects of this research very early, in fact I believe as early as any group anywhere, under the guidance of a special committee appointed by the President. This committee was reorganized under NDRC when the latter was formed.

This same policy is applied throughout the OSRD organization. The principle is that no individual receives secret information except as it is necessary for his proper functioning in connection with his assigned duties. It is used by the British themselves, and they occasionally ask us to apply special restrictions on information they furnish us, beyond current practice, when especially secret matters are involved.



I find it hard to believe, therefore, that the present British objection is to the policy. However, the last two paragraphs of CCWD 1807 Z are very pertinent in this connection. The first of these states the principle, and the second states that the application made is a logical result of the principle. It then goes on to say that this "destroys the original conception of 'a coordinated or even jointly conducted effort between the two countries'." If the application is logical, then the objection must be to the principle itself. To step beyond this principle would, however, involve giving information to those who could use it, not for the best prosecution of the war effort, but rather for other purposes, such as after-the-war commercial advantages.

I have to conclude, therefore, that the British objection arises because of our withholding information which they consider might be of value in connection with their post-war situation. If that is really their position, then presumably it should be duly considered in connection with the entire post-war relationship between the two countries. It should be considered on its merits, and in due perspective to other relations. To transmit such information for such a purpose would involve our giving to Great Britain information obtained by this country as a result of great expense and effort, and, while we freely transmit for the purpose of furthering our joint war effort, we can hardly give away the fruits of our development as a part of post-war planning except on the basis of some over-all agreement on that subject, which agreement does not now exist. The proper conduct of the secure development of a potentially important weapon should not be modified to produce this further result simply as an incident. In this connection I draw your attention to the enclosed memorandum by Dr. Conant.

My recommendation, therefore, is that the reply to the appended telegrams should attempt to fix the issue upon this point, if this is indeed, as I am inclined to believe, the point which is primarily in the mind of the British, in order that it may be considered in due time in connection with the broad problem of post-war relationships.

Specific points of application or the principle other than this are not, I believe, prominently in the British mind. However, it will be well to review them briefly; for they are consistent with the policy, applicable without distinction to UK and US groups, and, I believe, reasonable, and adapted to best progress with due regard to security.

There has been, from the beginning, full scientific interchange wherever scientific groups are working, in the two countries, on the same aspect of the subject. This it is proposed to continue. Recent failure to do so has been due entirely to British refusal thus to collaborate, while a policy to which they object stands.

Thus, there is a group in Chicago working on one part of the program, and a group on the same phase is being formed in Canada. We proposed complete scientific interchange between these groups as far as scientific research is concerned, but not on the details of the manufacturing process which we alone are prepared to carry on. Similarly there are groups on the scientific aspects of diffusion, and we proposed continued interchange here on a similar basis.

On the other hand, we have long worked at California on an electromagnetic process, and the British have not worked along these lines. We see no need for furnishing them information on our scientific results on this phase. They do not, I feel, object. They could not use such information, and our scientific group on this phase is fully adequate, and now includes as many scientific men as should work on this phase, at the expense of other scientific phases of the war effort.

We propose shortly to gather a special scientific group at an isolated site to work on some of the phases involved in actual bomb construction. It is essential that this be kept from the enemy at all costs. It is exceedingly difficult in this field, where the general background was known to all sorts of scientists all over the world before the work was brought under control, to secure adequate secrecy. Hence we propose to isolate this



group, by special measures, from the rest of the world, including the bulk of our own scientists and of British scientists. However, we are quite willing to invite a British scientist or two to join the group, and have so indicated, provided they will render themselves subject to the same rigid control, for a period which may be several years, as apply to the American scientists that we invite.

We are now erecting manufacturing plants. The information gathered in reducing the manufacture to practice will be extensive, and many inventions will result in patent applications assigned to the United States Government. This is being handled through American companies in which we have confidence. We do not propose to make these manufacturing plans available to any group, British or American, unless it is fully necessary thus to extend information in order to maintain full speed. British commercial interests would like to have these plans, and an account of the operations of plants. So would, undoubtedly, various American companies that are not bound under contract to extend patent rights to the U. S. Government on any invention made by them in this connection.

Finally, there is the matter of military use. This will not come into question for some time. If the war is not of long duration, if there is no danger that the method may be used against us with disastrous results, it may never come into question. When it does, there will undoubtedly be set up special military channels for appropriate consideration of strategy, tactics, and use. I feel sure there is no concern in the minds of the British on this point.

In conclusion, before making a final reply, it is my recommendation that you again state the case briefly, and inquire where the specific objection now rests.

A handwritten signature in dark ink, appearing to be 'A. J. Smith', located at the bottom right of the page.

DEPARTMENT OF STATE  
THE SECRETARY

TELEGRAM RECEIVED

This telegram must be closely paraphrased before being communicated to anyone. (MC)

FROM: London

DATED: April 1, 1943

REC'D: 6:26 p.m.

Secretary of State,  
Washington.

URGENT

2326, April 1, 10 p.m.

Embassy has received for transmission the following message from the Prime Minister to Mr. Harry Hopkins:

"One. Many thanks for yours of thirtieth. I look for good and speedy results in Tunisia. I do trust you will give careful consideration to my proposal for a meeting. There are so many things that I want to talk over with you.

"Two. I am much concerned at not hearing from you about tube alloys. That we should work separately would be a sombre decision."

MATTHEWS

S FED:MCW

THE WHITE HOUSE  
WASHINGTON

April 2, 1943

MEMORANDUM FOR

THE PRESIDENT

I suppose this is self-explanatory to you.

MHM

ST. Bush folder 2-43

file  
personal

ST Bush folder 2-43

OFFICE FOR EMERGENCY MANAGEMENT  
OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT  
1530 P STREET NW.  
WASHINGTON, D. C.

VANNEVAR BUSH  
Director

March 31, 1943.

Mr. Marvin H. McIntyre,  
The White House,  
Washington, D.C.

Dear Mr. McIntyre:

When I lunched with the President last Wednesday he inquired concerning a military establishment in the State of Washington. It appears that one of the Senators from Washington had taken up with him the question of whether this establishment would not unduly interfere with agricultural efforts in the region. At the time I did not know all the facts, and I hence told the President that I would look it up.

I find that the establishment in question, which is near Pasco, is indeed one connected with a development that I have had something to do with. Accordingly, I discussed the entire affair with the Army engineers involved and examined particularly into the question of interference with crops. I came to the definite personal conclusion that every care has been used to render this interference minimum.

A very careful search was made before choosing the site. No other site in the entire country could be found that combined the rather strict needs of this project for power, water, and isolation. A representative of the Department of Agriculture looked over the site with the Army representatives and stated that he knew of no other site where less damage would be done to agriculture in view of the needs. The extent of the tract occupied and the general arrangements have been based on the recommendations of engineers that I consider highly competent, and I believe their stated requirements are essential for the best success of the effort and could not safely be decreased.

I also find that definite steps have been taken to insure that this year's crops will be taken off except where the area is actually in use, and the used area will be a small part of the tract. The efforts to keep the interference with agriculture in the region at an absolute minimum consistent with Army needs seem to me to have been handled with every inclination to protect the agricultural effort as far as possible.

I think that the President did not wish me to do anything further than to examine into the situation independently and form an opinion as to whether it was being well handled. This I have done with the above conclusions. If, however, there is anything further he would care to have me do in this connection, you will of course let me know.

Cordially yours,

A handwritten signature in dark ink, appearing to read 'V. Bush', with a stylized, cursive flourish.

V. Bush,  
Director.



OFFICE FOR EMERGENCY MANAGEMENT  
OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT  
1530 P STREET NW.  
WASHINGTON, D. C.

*Hand*

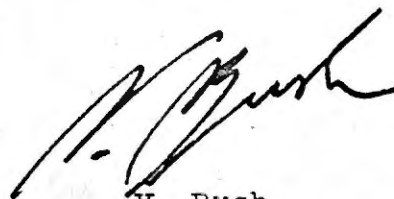
VANNEVAR BUSH  
Director

*Take all day*

April 27, 1943.

MEMORANDUM FOR MR. HARRY HOPKINS:

Dr. Conant and I met Saturday with Dean Mackenzie, who is the Canadian scientist primarily concerned with the subject we discussed, on which the British have objected to our decision regarding the extent of interchange. Dean Mackenzie is on his way to England to discuss this matter. I rather think that he agrees entirely that our decision is reasonable, and I believe that he will urge the British to withdraw their objections. I will of course let you know if anything further develops.



V. Bush,  
Director.

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DECLASSIFIED

AEC to Director FDR

2-12-70

June 10

0847Z

From: London

To: The President of the United States

No. 374, June 10, 1943

From the Prime Minister to Mr. Harry Hopkins  
personal.

As you will remember, the President agreed that the exchange of information on tube alloys should be resumed and that the enterprise should be considered a joint one to which both countries would contribute their best endeavours. I understood that his ruling would be based upon the fact that this weapon may be developed in time for the present war and that it thus falls within the general agreement covering the inter-change of research and invention secrets.

I am very grateful for all your help in getting this question settled so satisfactorily. I am sure that the President's decision will be to the best advantage of both our countries. We must lose no time in implementing it.

I have asked the Lord President to make sure that the right people are on the spot and ready to resume active collaboration as soon as the President has given the necessary instructions. I should be grateful if you would telegraph me as soon as this has been done so that our people can be instructed to proceed to Washington and be at your disposal.

PRIME



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AEC to Director FDRL

2-12-70

JUNE 17, 1943

PERSONAL AND [REDACTED] FROM HARRY HOPKINS TO THE  
PRIME MINISTER

IT NOW APPEARS THAT THE VISIT OF MARSHALL  
AND KING WILL BE POSTPONED FOR AT LEAST TWO WEEKS  
OR EVEN LONGER. THEY HAVE NO DEFINITE PLANS NOW  
ABOUT GOING.

THE MATTER OF TUBE ALLOYS IS IN HAND AND I  
THINK WILL BE DISPOSED OF COMPLETELY THE FIRST  
OF THE WEEK.

THE VISIT OF MAX HAS BEEN VERY USEFUL AND  
PLEASANT

FOR THE PRESS

June 17, 1940

The President has named the following to be members  
of the new National Defense Research Committee:

Dr. Vannevar Bush, Chairman  
President, Carnegie Institute of Washington

Dr. J. B. Conant,  
President, Harvard University

Dr. Richard C. Tolman,  
California Institute of Technology

Dr. Karl Compton,  
President, Massachusetts Institute of Technology, Mass.

Hon. Conway P. Coe,  
Commissioner of Patents, Commerce Dept.

Dr. Lyman J. Briggs,  
Director, National Bureau of Standards.

Dr. F. B. Jewett,  
President, National Academy of Sciences, New York City

The Secretary of War

The Secretary of the Navy

TELEPHONE 3352

*Ford Cornwall*

CHRIST CHURCH,  
OXFORD.

30th May 1943

*My dear Harry,*

I was so sorry not to see you again on Tuesday to make my adieux, especially as I wanted to thank you for all you had done to make my stay pleasant and profitable.

I understand that the matter we discussed was concluded satisfactorily and I am sure that this is largely due to your efforts. I am very glad, as it is certainly to everyone's advantage that the old conditions should be restored.

It was a great pleasure to have an opportunity of talking to the President and Vice-President on Post-war topics and I was delighted to find how closely I agreed with their line of thought. For arranging this once again, I am sure I must thank you.

I trust you will forgive this hasty typed note; it will at any rate save you the trouble of trying to decipher my handwriting.

In the hope that we may meet again soon, believe me, once more with best thanks and souvenirs affectueux

*as ever*

*Yours*

*C.*

Harry Hopkins Esq.,

The White House,

Washington, D.C.

June 28, 1943

Dear Prof:

It was so good to hear  
from you and I am glad you thought  
the trip worthwhile. We certainly  
enjoyed, ever so much, having you.

It may be that I will  
see you before the summer is over.

Cordially yours,

HARRY L. HOPKINS

The Right Honorable,  
The Lord Cherwell,  
Christ Church,  
Oxford, England.



LCR 1  
filed 09/0848 Z  
FB

URGENT

CC.D  
July 9, 1943  
0910 Z

*Harry Truman  
Approved*

From: London, England  
To: THE PRESIDENT OF THE UNITED STATES

No. 354 9 July 1943

Former Naval person to President Roosevelt  
personal and ~~most secret~~. Number 354.

Since Harry's telegram of 17th June I have been anxiously awaiting further news about Tube Alloys. My experts are standing by and I find it increasingly difficult to explain delay. If difficulties have arisen, I beg you to let me know at once what they are in case we may be able to help in solving them.

No Sig

*Answered by Pres PM #326*

REGRADED UNCLASSIFIED by British  
Govt., State Dept. tel., 3-29-72  
By R. H. Parks Date MAY 5 1972

THE WHITE HOUSE  
WASHINGTON

July 9, 1943

MEMORANDUM FOR MR. HOPKINS

The President wishes you to prepare an answer  
to the attached message to-day.

Respectfully,

  
Chester Hammond

Map  
Room,  
Box 4



LCR 1  
filed 09/0848 Z  
FB

CC.D  
July 9, 1943  
0910 Z

URGENT

*Handwritten:*  
Harry Truman  
Approved

From: London, England  
To: THE PRESIDENT OF THE UNITED STATES

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Former Naval person to President Roosevelt  
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No Sig

*Answered by Pres. PM #326.*

REGRADED UNCLASSIFIED by British  
Govt., State Dept. tel., 3-29-72  
By R. H. Parks Date MAY 5 1972

Mr President

Does this go to Admiral  
Brown to file or keep.  
it in our Secret files  
here? GSt.

*V. Bush folder  
2-43*

THE WHITE HOUSE  
WASHINGTON

July 14, 1943.

MEMORANDUM FOR

HON. HARRY HOPKINS:

What should I do about this  
and the reply to Churchill's wire?

F.D.R.

Ltr. 6-30-43, from Harry Hopkins to  
Dr. Vannevar Bush, Carnegie Institution,  
1530 P St., N.W., re discussion with the  
Prime Minister re question of exchange of  
information re tube alloys, including the  
building project.

*The above ltr. 6/30/43, from Mr. Hopkins  
+ orig. of this memo sent to Dr. Bush,  
7/14/43.*

THE WHITE HOUSE  
WASHINGTON

August 11, 1943

MEMORANDUM FOR

MISS GRACE TULLY

The President has  
read this and it can now  
be filed.

H.L.H.

Encl.  
file from  
Dr. V. Bush re  
tube alloys



757-Back  
~~SECRET~~  
Subject File  
OFFICE FOR EMERGENCY MANAGEMENT

OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT

1530 P STREET NW.

WASHINGTON, D. C.  
Washington 25, D.C.

August 7, 1943.

VANNEVAR BUSH  
Director

The President,  
The White House,  
Washington, D.C.

Franklin D. Roosevelt Library

DECLASSIFIED

AEC to Director FDRL

2-12-70

Dear Mr. President:

Pursuant to your instructions contained in your letter of July twentieth, I have proceeded to arrange for further interchange with the British on the subject of tubealloy.

This matter was, in fact, raised by the Prime Minister while I was in London and there were conferences there in which Secretary Stimson participated. In response to your cable to the Prime Minister, Sir John Anderson arrived in this country this week and there have been further conversations here. We asked him to indicate definitely the way in which the present American policy should be altered or supplemented in order to provide for interchange as desired by the British, and he has done so in a letter, a copy of which I enclose. I have replied to this, and enclose a copy of my reply, the substance of which has been approved by Secretary Stimson and General Marshall. Unfortunately, Mr. Wallace has been out of the city this week so that I could not consult him, but I feel sure that he will also approve the arrangements. I have also informed the members of the Military Committee on this subject, General Styer and Admiral Purnell, of developments. Finally, I enclose a copy of a brief letter dated August 6, in which Sir John Anderson indicates that our agreement is satisfactory to him.

In my opinion this exchange of letters provides adequately for appropriate interchange, with due regard to the maintenance of security, and with the object of providing the British with all of the information which they can utilize in this connection in the prosecution of the war, in return for the benefit of the deliberations of their own scientific and technical groups.

Sir John Anderson has now written me a further letter concerning details of interchange, but I feel this should go before the Combined Policy Committee as soon as it is formed.



~~SECRET~~

-2-

You will note that my reply gave no comments concerning the first four points, which are matters of broad international agreement. I understand that the Prime Minister has advised Secretary Stimson of these suggestions. There has, of course, been some discussion of these during the course of my consultations, and I have encountered some strong opinions concerning them, but you will undoubtedly wish to consult on this broad aspect of the matter directly rather than through me.

I have attempted to bring about the extended and renewed interchange which you desire, in an appropriate and effective manner, without introducing any step which could be regarded as either improper or improvident. Our thought has been guided by the conviction that all steps taken at this time should be solely for the purpose of winning the war at the earliest possible moment. I trust you will feel that this attempt has been successful, and that we may have your further instructions.

At your convenience I shall of course be happy to report to you upon other aspects of my recent journey.

Respectfully yours,



V. Bush,  
Director.

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AEC to Director FDRL

2-12-70



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AEC to Director FORL

2-12-70

BRITISH EMBASSY  
WASHINGTON, D.C.

6th August, 1943.

My dear Dr. Bush,

Thank you so much for your letter of the 6th August which is entirely satisfactory from my point of view.

I am of course quite ready to make the small amendment which you suggest in the first clause of the draft agreement, and I am now proposing to submit the draft, with this alteration, to the Prime Minister for his consideration. I assume therefore that you will similarly submit it to the President.

As regards the point made regarding the interpretation of sub-paragraph (b) in the 5th clause of the draft, I agree, of course, that it will not be for the combined Policy Committee to interfere with the control of the American programme by the Corps of Engineers of the United States Army. My thought is that the members of the combined Policy Committee should have such information as may be necessary to enable all of us to be satisfied that we are making the greatest possible contribution towards bringing the project to fruition at the earliest possible moment.

I am afraid that, owing to the short notice which it was possible to give of my visit, you have been put to considerable inconvenience, and I am most grateful to you for the great trouble you have taken to round the matter off in the limited time which I have been able to spend here.

My visit has given me great pleasure personally and I hope we may meet again soon.

Yours very sincerely,

(signed) JOHN ANDERSON

Dr. Vannevar Bush,  
Office of Scientific Research & Development,  
1530 P. Street, N.W.,  
Washington, D.C.

OFFICE FOR EMERGENCY MANAGEMENT  
OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT

1530 P STREET NW.

WASHINGTON, D. C.

Washington 25, D.C.

August 6, 1943.

Franklin D. Roosevelt Library

DECLASSIFIED

AEC & FORL Director  
2-12-70

VANNEVAR BUSH  
Director

Sir John Anderson,  
Lord President of the Council,  
British Embassy,  
Washington, D.C.

My dear Sir John:

I was glad to receive your letter of August 4 and I believe that it presents an excellent basis for settlement of the question of interchange of information which we discussed. It is evident that the subject matter of the suggested agreement falls into two categories. The first four points are concerned with matters of international understanding quite beyond the definite problem of appropriate arrangements for interchange. These four points, therefore, are for the consideration of the President and the Prime Minister.

I have reviewed the fifth point only, which is concerned with arrangements for full and effective collaboration on the research and development program, with Mr. Stimson and with General Marshall and have, of course, discussed it quite fully with Dr. Conant. All of us are in agreement that it presents a procedure by which interchange on this subject can now be carried on for the purpose of the most rapid possible development of this affair. Mr. Wallace, the remaining member of the Policy Committee to which the President referred the general handling of this subject, is absent from the city and I have not been able to discuss the matter with him. I am, however, confident that he will agree. The matter, therefore, appears to be now in form for presentation to the Prime Minister and to the President, and it is to be hoped that they will agree that a suitable solution has been reached.

The object of the arrangement is so to interchange information, as you state, as to bring the project to fruition at the earliest possible moment. This

FILED  
ACC to Director FDRL  
2-12-70

has in fact been definitely in the minds of our Policy Committee from the outset, and was in fact the basis for our recommendation that interchange should be made wherever the receipt of the information would definitely advance the project as a war measure. The implementation of this in its detail has in fact become confused in recent months, but I am glad to say that I now feel that on the basis of your memorandum we have arrived at a position where all possible misunderstandings may be promptly cleared away, and fully effective collaboration restored. In order that we may be sure that there is now no misunderstanding I will comment on a few points.

There is one very small point in your first clause of the draft. You state that a very much greater expense will fall upon the United States. I suggest that this might now be put in the past tense. The fact is, of course, as you know, that the United States has already committed itself to the expenditure of hundreds of millions of dollars, and has employed the services of thousands of scientific and technical men on the project. It might, therefore, be well in the final draft to signify this fact by a minor change at this point.

As you state, the acceptance of this draft of principles will soon need to be followed by steps for implementing the arrangements in detail. I have now received your letter of August 5 along these lines, but have not placed it before our policy group. As a matter of procedure the first step after the formation of the Policy Committee would certainly seem to be the presentation to that Committee by American and British scientists the over-all picture of the current situation in their respective countries and the plans for the future. On the basis of the evidence thus presented the Policy Committee would agree as to the method of providing specific interchange to carry out the provisions of the agreement.

One very important early step will be the selection of the Combined Policy Committee to which we will proceed to give thought immediately. The most important

REC'D DIRECTOR FORL  
2-12-70

result of the creation of this Committee will, I think, be that it will provide for a thorough understanding of the general status and progress of the effort at the top level in the two Governments. It is our understanding that while the members of the Policy Committee will have access to all general information about all phases of the effort, the interchange of information about the detail of manufacture or construction of plants or of any final weapon will be governed by the provisions of (d), and that your suggested provision (b) merely is intended to provide that members of the Committee may interchange with their immediate scientific advisers the information they may have, in view of the fact that in some cases members of the Committee may not themselves be scientists. It is, of course, clear that this Committee is concerned with general policy, especially as to the extent and procedure on the interchange; and that its existence will not interfere with the control of the American program by the Corps of Engineers of the United States Army. I trust that we may find it possible to select a very strong group indeed for this purpose.

I trust that you will present this matter to the Prime Minister when you meet, and if you will let me know that you intend to do so, I will simultaneously transmit our exchange of letters to the President, so that they may both be fully informed of the successful outcome of our discussions when they meet. I hope very much we will find that they are also in agreement on the procedure at which we have now arrived.

Very truly yours,

Vannevar Bush.



BRITISH EMBASSY  
WASHINGTON, D.C.

4th August, 1943.

My dear Dr. Bush,

Many thanks for your letter of the 3rd August and the documents which you kindly sent me with it.

As you know, the Prime Minister prepared some draft Heads of Agreement after our meeting in London and sent a copy of them to Mr. Stimson. I have been working on this document in the light of our talk and I now send you an expanded version of it which I have entitled:- "Draft articles of Agreement governing collaboration between the authorities of the U.S.A. and the U.K. in the matter of Tube Alloys".

My idea is that we should try to reach agreement on a draft along these lines and submit it as soon as possible to the President and the Prime Minister for their consideration.

You will see that in the draft articles I have dealt with the broad principles on which interchange of information should be conducted. I contemplate, however, that there should be a second memorandum setting out with greater precision and detail the arrangements which should govern the direct interchange of information between the groups in our two countries working on each section of the project. If the wording of the document dated the 15th of December 1942, and enclosed in your letter, were altered to make it clear that it applied to interchange on this level only, I agree with you that it might well serve as a basis for this second memorandum. The details would, of course, need modification in the light of the programme of work agreed by the combined Policy Committee; but I imagine that you always intended that these arrangements should be reviewed and amended in the light of alterations made from time to time in our respective programmes.

Dr. Vannevar Bush,  
Director, Office of Scientific Research and Development.

The draft articles have been prepared in a form suitable for an agreement between the U.S.A. and the U.K. only. We shall, I think, have to discuss together and with the Canadians the question of Canadian participation which would, of course, necessitate appropriate changes in the form and wording. But we need not let that delay us in our immediate task of settling the kind of clauses which should be contained in the agreement, whether the Canadians come in or not.

Finally, may I thank you very much for sending me the statement on the possible use of radio-active material in warfare. This is a matter to which we also have given some attention. I shall look forward to receiving the more detailed report to which you refer, and I will, on my return, at once have the results of our studies checked against yours.

Yours very sincerely,

(signed) JOHN ANDERSON

Dr. Vannevar Bush,  
Office of Scientific Research and Development,  
1530 P Street, N.W.,  
Washington, D.C.



DRAFT articles of Agreement governing collaboration between the authorities of the U.S.A. and the U.K. in the matter of Tube Alloys.

---

1. Whereas it is vital to our common safety in the present War to bring the Tube Alloys project to fruition at the earliest moment; and whereas this may be more speedily achieved if all available British and American brains and resources are pooled; and whereas owing to war conditions it would be an improvident use of war resources to duplicate plants on a large scale on both sides of the Atlantic and therefore a far greater expense will fall upon the United States;

It is agreed between us

First, that we will never use this agency against each other.

Secondly, that we will not use it against third parties without each other's consent.

Thirdly, that we will not either of us communicate any information about Tube Alloys to third parties except by mutual consent.

Fourthly, that in view of the heavy burden of production falling upon the United States as the result of a wise division of war effort, the British Government recognize that any post-war advantages of an industrial or commercial character shall be dealt with as between the United States and Great Britain on terms to be specified by the President of the United States to the Prime Minister of Great Britain. The Prime Minister expressly disclaims any interest in these industrial and commercial aspects beyond what may be considered by the President of the United States to be fair and just and in harmony with the economic welfare of the world.

And Fifthly, that the following arrangements shall be made to ensure full and effective collaboration between the two countries in bringing the project to fruition:

(a) There shall be set up in Washington a Combined Policy Committee composed of:-

The functions of this Committee, subject to the control of the respective Governments, will be:-

- (1) To agree from time to time upon the programme of work to be carried out in the two countries.
  - (2) To keep all sections of the project under constant review.
  - (3) To allocate materials, apparatus and plant, in limited supply, in accordance with the requirements of the programme agreed by the Committee.
  - (4) To settle any questions which may arise on the interpretation or application of this Agreement.
- (b) There shall be complete interchange of information and ideas on all sections of the project between members of the Policy Committee and their immediate technical advisers.
- (c) In the field of scientific research and development there shall be full and effective interchange of information and ideas between those in the two countries engaged in the same sections of the field.
- (d) In the field of design, construction and operation of large-scale plants, interchange of information and ideas shall be regulated by such ad hoc arrangements as may, in each section of the field, as appear to be necessary or desirable if the project is to be brought to fruition at the earliest moment. Such ad hoc arrangements shall be subject to the approval of the Policy Committee.

~~SECRET~~

July 26, 1943.

PRIORITY

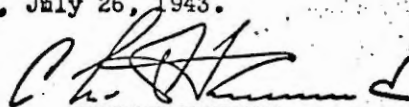
From: P Opnav  
To : Alusna, London

IN REPLY TO YOUR 354. I HAVE ARRANGED SATISFACTORILY  
326th personal and ~~for~~ message from the President for the  
Former Naval Person.

In reply to your 354. I have arranged satisfactorily for  
Tube Alloys. Unless you have the proper person in this country  
now, it might be well if your top man in this enterprise comes over  
to get full understanding from our people.

Roosevelt

Released from the White House Map Room  
at 1735, EWT, July 26, 1943.

  
CHESTER HAMMOND,  
Lt. Colonel, General Staff,  
Assistant Military Aide to the  
President.

DECLASSIFIED  
By Deputy Archivist of the U.S.  
By W.S. Stewart  
Date NOV 1 1971

~~SECRET~~

Map Room Rm 4



~~SECRET~~

JULY 26, 1943

#326

PERSONAL AND ~~SECRET~~ TO THE FORMER NAVAL PERSON FROM THE  
PRESIDENT

IN REPLY TO YOUR 354. I HAVE ARRANGED SATISFACTORILY  
FOR TUBE ALLOYS. UNLESS YOU HAVE THE PROPER PERSON IN THIS  
COUNTRY NOW, IT MIGHT BE WELL IF YOUR TOP MAN IN THIS  
ENTERPRISE COMES OVER TO GET FULL UNDERSTANDING FROM OUR  
PEOPLE.

*Roosevelt*

DECLASSIFIED  
By Deputy Archivist of the U.S.  
By *W. J. Stewart*  
Date *NOV 1 1971*

~~SECRET~~

*Handwritten: 1. ask for 2-X*

THE WHITE HOUSE  
WASHINGTON

July 28, 1943.

MEMORANDUM FOR THE PRESIDENT:

Col. Sexton, in General Marshall's office, called to say that Dr. Conant is not in town today but is expected between 10:00 and 10:30 tomorrow morning. He may then be reached at Dr. Bush's office -- Dupont 6400.

djb

*Gilbert - where?*

~~SECRET~~ ← G-3  
CARNegie INSTITUTION OF WASHINGTON

WASHINGTON, D. C.

Franklin D. Roosevelt Library

DECLASSIFIED

AEC & Director, FORC  
2-12-70

OFFICE OF THE PRESIDENT

July 28, 1943

not in file  
concerns

Dear Mr. President:

I beg to acknowledge receipt of your letter of July 20th to Dr. Bush concerning exchange of information with the British Government regarding tube alloys. I have informed Dr. Bush, who is now in England, concerning the substance of your letter.

Tomorrow I shall also bring your letter to the attention of Dr. James B. Conant upon his return to Washington. He is now in Chicago on business related to this project, on which he acts as Dr. Bush's deputy.

Sincerely yours,

*Carroll L. Wilson*

Carroll L. Wilson  
Executive Assistant  
to Dr. Bush

The President  
The White House  
Washington

~~SECRET~~



31:656

*family*

THE WHITE HOUSE  
WASHINGTON

July 27, 1943

Dearest Franklin:

Mr. Irving S. Lowen, the man about whom I telephoned will be in Washington tomorrow.

Mr. Lowen says that Dr. Bush and Dr. Conant would be of absolutely no use because they have been so close to the project that they have perhaps lost the sense of urgency which these younger men have.

There is they believe, a chance that a very brilliant man who is working on this in Germany may have been able to develop to the point of usefulness. The Germans are desperate and would use this if they have it ready. It is imperative they feel that we proceed quickly to perfecting it and these young scientists believe that they are already two years behind all that they might have accomplished if they had been allowed to progress.

They want an investigation by an impartial outsider who can see the possibilities of what might happen, but who is not a scientist, ~~perhaps~~ a man of judicial temperament who will weigh the possibilities.

Mr. Lowen thinks you might want to speak to some of the other men

Professor H.C. Urey, Columbia  
Professor Wigner  
Professor Szilard  
Professor Fermi  
Professor Oppenheimer  
Dr. Gle Young  
Professor A. H. Compton,  
all of various parts of the project.

*(the file on Mr. Lowen is)*

PSF: gen corres "L"  
3-13

THE WHITE HOUSE  
WASHINGTON

*File  
Personal  
&  
Confidential*

MR. GRIM:

Mr. Irving Lowen is to have  
an appointment with the President.  
Will you tell whoever should be  
told so he can be admitted? I  
do not know whether the President  
will see him at the house or at  
the office. Mrs. Roosevelt spoke  
to the President and Mr. Lowen is  
to ask for General Watson.

m.c.t.

*Rec- Family folder for ltr. from Mrs. P.,  
7/27/re Lowen.*

THE WHITE HOUSE  
WASHINGTON

July 29, 1943.

REMINDER FOR THE PRESIDENT:

At 10.45 a.m., today, you wish to be reminded to call up Dr. Conant in Dr. Vannevar Bush's office (Dupont 6400) to ask Dr. Conant to see Mr. Irving J. Loen.

Mr. Loen will telephone General Watson's office at 11.15 to find out when Dr. Conant can see him.

E. M. W.

*P. St. 10 a.m. Sat.*

- ② President called me in at 2.40 Re  
downen, and Conant will see  
him at 10<sup>00</sup> a.m. Saturday in  
his office. Downen has been notified  
and will be there.

Jack Romagnas

← notes

7/29/43

THE WHITE HOUSE  
WASHINGTON

July 29, 1943.

MEMORANDUM FOR THE PRESIDENT:

Mr. Irving Lowen<sup>w</sup> 'phoned my office this morning from New York, re his possible appointment with Dr. Conant. He said that due to bad case of food poisoning he found it necessary to return to New York yesterday instead of waiting here. He further stated that while he could come back to Washington today if it was felt necessary, he hoped he could have an appointment with Dr. Conant later on. (71 Wash. Sq. S., Gram. 5-2678)

*E. M. W.*  
E. M. W.

Jack Romagna: We have told Mr. Lowen that the President would have some information this afternoon for him. He, the President, has been unable to contact Dr. Conant re an appointment for Mr. Lowen.

E. M. W.

(1530 P. ST. NW)

I was not being shortly this a. m. I was told  
by Gen. Gage that Gage's Bureau's heat was Haverhill  
& Brickman & he would be to the place heads of  
the team - I can pick up someone in each place if I need  
them. I don't want to take Tommy, she stands  
heat badly & I would be much worried & held back  
if she got ill than anything she could do  
would compensate for - I am quite willing  
not to go -

Jack Love

*[Handwritten signature]*

I hope you the women - He has been  
here with his two anxiety -



April 15, 1943

Dear Edward:

Could you send this  
to Anthony for me?

Cordially yours,

encl. HARRY L. HOPKINS  
Cable

His Excellency  
The Right Honorable  
Viscount Halifax  
British Embassy  
Washington, D.C.

*Handwritten:*  
F. L. Hopkins  
Apr 16 1943  
(13)  
✓

DECLASSIFIED

AEC to Director FDRL  
2-12-70

~~SECRET~~  
April 15, 1943

PERSONAL AND ~~SECRET~~ TO ANTHONY EDEN FROM HARRY  
HOPKINS

YOUR MESSAGE REGARDING SECRET MATTER RECEIVED.

I AM GOING TO SEND YOU ON MONDAY A FULL TELEGRAM  
ABOUT THE MATTER.

ON FURTHER INQUIRY I FIND IT HAS MANY  
RAMIFICATIONS AND I THEREFORE AM ANXIOUS TO SEND  
YOU MY VIEWS FULLY.

DELIGHTED THAT YOU RETURNED SAFELY.

HARRY

DECLASSIFIED

AFC To Director FORL

2-12-70

BRITISH EMBASSY  
WASHINGTON, D. C.

~~Most Secret~~ and Personal

April 14th, 1943.

My dear Harry,

Anthony has asked me to give you the  
following message from him:-

"Have you any news for me about  
very secret matter we discussed? You will  
realize we have various decisions to take  
if there has to be separate development.

Kindest regards."

I was proposing to write him a secret  
word about the larger issues we raised together  
last night, so that nobody but he would see it,  
and explain why for that reason you had nothing  
to say at the present moment. But you may like  
to send some message of your own in reply to this.

Yours very sincerely,



The Honourable

Harry L. Hopkins,

The White House,

Washington, D. C.

May 26, 1943.

Mr. Hopkins:

Have I summed it  
correctly?

If so, you may wish to  
initial so that we may each  
have a record in the file.

*N.B.*

~~SECRET~~  
DECLASSIFIED

AEC &amp; Director FDRL

2-12-70

May 25, 1943.

MEMORANDUM OF CONFERENCE WITH MR. HARRY HOPKINS AND LORD  
CHERWELL AT THE WHITE HOUSE, MAY 25, 1943.

Mr. Hopkins called me on the telephone and told me that the Prime Minister had formally raised the question of interchange on S-1, and asked me to confer with Lord Cherwell in his office to see if there could be a meeting of minds.

I met Mr. Hopkins and Lord Cherwell at 3:30. Lord Cherwell asked that I state why we had altered our policy in regard to interchange on this subject. In reply, I traced the entire subject from the standpoint of its organization, beginning with the Briggs Committee and going through the NDRC handling, the taking over by the military, the existence of the Military Committee, and the Policy Group consisting of the Vice President and others. I then outlined the way in which the present policy had been adopted by these groups, making it clear that a new policy was needed at the time that the matter went into production in the hands of the Army, inasmuch as OSRD previously had had to do only with the scientific angles. I then outlined the principle which was adopted and outlined its application. I then asked Lord Cherwell whether they disagreed with the principle itself or with the way in which it was being applied. He stated that he disagreed with the principle itself.

We then had a considerable discussion in which I outlined that this was a principle that was applied generally. I also made it clear that the reason for the restriction of information to those who could use it in this war was for security purposes. I made it clear that this was being applied impartially and that there were groups such as the Naval Research Laboratory which wished much more information but were not being given it because they could not utilize it in this war.

Incidentally, in discussing the reasons for a restricted policy, namely security, I told Lord Cherwell that, if we were to furnish the manufacturing information freely at all points to the British, we could not then very well refuse to pass similar information from one American company to another, that we had at the present time each company confined to its proper field, that no information was being passed beyond that necessary for each company to operate properly therein, and that we would feel that it was undesirable from a security standpoint



~~SECRET~~

-2-

to pass the information around more freely than this in American companies. He stated that of course if we furnished the manufacturing information it would be to the British Government, and I stated that of course I would assume that the British Government would immediately have to work with some company such as I.C.I. in order to utilize the information effectively, which he did not contest.

On my insistence that, under the present plans, the British could not use for the purposes of this war the information on the manufacturing process; Lord Cherwell agreed that this was true as far as the present plans go. He also stated, however, that, unless this manufacturing information was furnished to the British, they might feel impelled to alter the plans and go into manufacturing themselves, to the disadvantage of the balance of the war effort. I pressed him on the question as to whether they would expect in this way to attain results useful in this war, and he did not insist that they could. The matter finally came down to the point where he admitted rather freely that the real reason they wished this information at this time was so that after the war they could then at that time go into manufacture and produce the weapon for themselves, so that they would depend upon us during this war for the weapon but would be prepared after this war to put themselves in a position to do the job promptly themselves. He disclaimed the commercial aspects. He felt that it would be five or ten years before the matter came into use commercially, and that if commercial usage was indicated after study the British could readily go into that aspect of the subject. It was quite clear, and Mr. Hopkins reiterated it and emphasized it, that the reason the British wish the information was so that in the period immediately after this war they would be able to develop the weapon for themselves very promptly and not after a considerable interval.

The matter having gotten very definitely boiled down to this one point, I took the point of view, in which Mr. Hopkins joined me, that delivery of information to the British for after-the-war military reasons was a subject which needed to be approached quite on its own merits, and that this question is tied up with the large problem of international relations on this whole subject from a long-term viewpoint. Lord Cherwell stated that there was a connection, because unless the British could now be assured that they would have this information for the above purpose they might have to divert some of their war effort in order to get it. He stated that



~~SECRET~~  
DECLASSIFIED

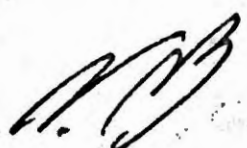
AEC to Director FBI

2-12-20

-3-

he did not wish to say that they would do this, that it was up to the Prime Minister, but that they might feel that they were constrained to do so in order that their position immediately after the war might be properly secure. He made it clear, of course, that he did not mean secure as against the United States, but rather as against some other country which might have it far developed at that time. Mr. Hopkins said some things about one administration not being able to commit a succeeding one, except where the matter was incorporated in a treaty.

In conclusion, Mr. Hopkins stated that he now had the point very definitely in mind for the first time, and that he understood now exactly what was the point at issue. He evidently intends to talk to the President about it, although he did not say so. I asked him whether he wished me at this time, in view of the new angle of the matter, to discuss it in any way with Mr. Wallace or Mr. Stimson. He stated that there was nothing further that he wished me to do, that he did not think that I should take the matter up with either of those men at the present time, and I said to him that I would sit tight and do nothing unless and until I heard from him further on the matter.

  
V. Bush.

~~SECRET~~  
DECLASSIFIEDAEC to Director FDR/L  
2-12-70

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~~SECRET~~  
DECLASSIFIED

-2-

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~~SECRET~~

Franklin D. Roosevelt Library

DECLASSIFIED

-3-

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V. Bush.

30  
Tube alloys

July 20, 1943

MEMORANDUM FOR

THE PRESIDENT

Dear Mr. President:

I think you made a firm  
commitment to Churchill in regard  
to this when he was here and there  
is nothing to do but go through  
with it.

H.L.H.

encls.

File on tube alloys



DECLASSIFIED

AEC to Director (DRL)

2-12-70

JULY 20, 1943

PERSONAL AND [REDACTED] TO THE FORMER NAVAL PERSON FROM THE  
PRESIDENT

IN REPLY TO YOUR 354. I HAVE ARRANGED SATISFACTORILY  
FOR TUBE ALLOYS. UNLESS YOU HAVE THE PROPER PERSON IN THIS  
COUNTRY NOW, IT MIGHT BE WELL IF YOUR TOP MAN IN THIS  
ENTERPRISE COMES OVER TO GET FULL UNDERSTANDING FROM OUR  
PEOPLE.



29 July 1943

From: American Embassy London  
To: The President of The United States

No. 388 Filed: 292217Z

Former Naval Person to President Roosevelt  
personal and ~~most secret~~ No 388.

Your No. 326. I am most grateful to you for your news. The Lord President of the Council, Sir John Anderson, has been responsible for handling this matter on our account for the last 2 years. I am sending him over by air immediately. He should arrive in Washington on Monday or Tuesday. He will make contact with our technical expert, Akers, and thereafter be at your disposal to discuss with anyone you wish. He will endeavour to meet Colonel Warden at Abraham on August 10 or 11 on his way home.

Prime

REGRADED  
UNCLASSIFIED

From the Office of

V. BUSH

August 4, 1943.

Mr. McIntyre:

I transmit a letter for the President which I have received from Dr. Oppenheimer, but which I think it is quite appropriate to transmit without my review. It is in reply to the President's recent letter to Dr. Oppenheimer.



V. Bush.

*file*  
*No answer*

LOS ALAMOS  
SANTA FE, NEW MEXICO  
P. O. BOX 1663

75-Back  
Subject File

July 9, 1943

Dear Mr. President:

Thank you for your generous letter of June 29th. You would be glad to know how greatly your good words of reassurance were appreciated by us. There will be many times in the months ahead when we shall remember them.

It is perhaps appropriate that I should in turn transmit to you the assurance that we as a group and as individual Americans are profoundly aware of our responsibility, for the security of our project as well as for its rapid and effective completion. It is a great source of encouragement to us that we have in this your support and understanding.

Very sincerely yours,

J R Oppenheimer

J. R. Oppenheimer

Franklin D. Roosevelt Library

DECLASSIFIED

AEC to Director FDR/L

2-12-70

The President  
The White House  
Washington, D. C.

~~Secret~~

THE WHITE HOUSE  
WASHINGTON

July 1, 1943.

MEMORANDUM FOR

DR. CONANT

Dr. Bush asked that the  
enclosed letters be sent to you  
for safe delivery.

Grace G. Tully  
PRIVATE SECRETARY

(Enclosures)

AEC & Director FDRL  
2-12-70

June 29, 1943

My dear Dr. Oppenheimer:

I have recently reviewed with Dr. Bush the highly important and secret program of research, development and manufacture with which you are familiar. I was very glad to hear of the excellent work which is being done in a number of places in this country under the immediate supervision of General L. R. Groves and the general direction of the Committee of which Dr. Bush is Chairman. The successful solution of the problem is of the utmost importance to the national safety, and I am confident that the work will be completed in as short a time as possible as the result of the wholehearted cooperation of all concerned.

I am writing to you as the leader of one group which is to play a vital role in the months ahead. I know that you and your colleagues are working on a hazardous matter under unusual circumstances. The fact that the outcome of your labors is of such great significance to the nation requires that this program be even more drastically guarded than other highly secret war developments. I have therefore given directions that every precaution be taken to insure the security of your project and feel sure that those in charge will see that these orders are carried out. You are fully aware of the reasons why your own endeavors and those of your associates must be circumscribed by very special restrictions. Nevertheless, I wish you would express to the scientists assembled with you my deep appreciation of their willingness to undertake the tasks which lie before them in spite of the dangers and the personal sacrifices. I am sure we can rely on their continued wholehearted and unselfish labors. Whatever the enemy may be planning, American science will be equal to the challenge. With this thought in mind, I send this note of confidence and appreciation.

Though there are other important groups at work, I am writing only to you as the leader of the one which is operating under very special conditions, and to General Groves. While this letter is secret, the contents of it may be disclosed to your associates under a pledge of secrecy.

Very sincerely yours,

Dr. J. R. Oppenheimer,  
Post Office Box 1663,  
Santa Fe,  
New Mexico.



RECEIVED

AEC to Director PDR  
2-12-70

June 29, 1943

My dear General Groves:

I have recently reviewed with Dr. Bush the highly important and secret program of research, development and manufacture with which you are familiar. I was very glad to hear of the excellent work which is being done in a number of places in this country under your immediate supervision and the general direction of the Committee of which Dr. Bush is Chairman. The successful solution of the problem is of the utmost importance to the national safety, and I am confident that the work will be completed in as short a time as possible as the result of the wholehearted cooperation of all concerned.

I am writing to you as the one who has charge of all the development and manufacturing aspects of this work. I know that there are several groups of scientists working under your direction on various phases of the program. The fact that the outcome of their labors is of such great significance to the nation requires that this project be even more drastically guarded than other highly secret war developments. As you know, I have therefore given directions that every precaution be taken to insure the security of your project. I am sure the scientists are fully aware of the reasons why their endeavors must be circumscribed by very special restrictions. Nevertheless, I wish you would express to them my deep appreciation of their willingness to undertake the tasks which lie before them in spite of the possible dangers and the personal sacrifices involved. In particular, I should be glad to have you communicate the contents of this letter to the leaders of each important group. I am sure we can rely on the continued wholehearted and unselfish labors of those now engaged. Whatever the enemy may be planning, American Science will be equal to the challenge. With this thought in mind, I send this note of confidence and appreciation.

Very sincerely yours,

Brigadier General L. R. Groves,  
Room 5120, New War Department Building,  
21st and Virginia Avenue, N. W.,  
Washington, D. C.

AEC to Director FDRL

2-12-70

June 29, 1943

[REDACTED]

My dear Dr. Oppenheimer:

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Very sincerely yours,

Dr. J. R. Oppenheimer,  
Post Office Box 1663,  
Santa Fe,  
New Mexico.

BY [REDACTED]

AEC &amp; Director PDR

2-12-70

June 29, 1943

[REDACTED]

My dear General Groves:

I have recently reviewed with Dr. Bush the highly important and secret program of research, development and manufacture with which you are familiar. I was very glad to hear of the excellent work which is being done in a number of places in this country under your immediate supervision and the general direction of the Committee of which Dr. Bush is Chairman. The successful solution of the problem is of the utmost importance to the national safety, and I am confident that the work will be completed in as short a time as possible as the result of the wholehearted cooperation of all concerned.

I am writing to you as the one who has charge of all the development and manufacturing aspects of this work. I know that there are several groups of scientists working under your direction on various phases of the program. The fact that the outcome of their labors is of such great significance to the nation requires that this project be even more drastically guarded than other highly secret war developments. As you know, I have therefore given directions that every precaution be taken to insure the security of your project. I am sure the scientists are fully aware of the reasons why their endeavors must be circumscribed by very special restrictions. Nevertheless, I wish you would express to them my deep appreciation of their willingness to undertake the tasks which lie before them in spite of the possible dangers and the personal sacrifices involved. In particular, I should be glad to have you communicate the contents of this letter to the leaders of each important group. I am sure we can rely on the continued wholehearted and unselfish labors of those now engaged. Whatever the enemy may be planning, American Science will be equal to the challenge. With this thought in mind, I send this note of confidence and appreciation.

Very sincerely yours,

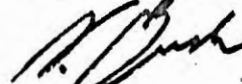
Brigadier General L. R. Groves,  
Room 5120, New War Department Building,  
21st and Virginia Avenue, N. W.,  
Washington, D. C.

June 28, 1943

Mr. Forster:

When I lunched with the President last Thursday I suggested two letters for his signature to help improve the morale of the scientists on an important matter, and he seemed to think this was desirable. I take the liberty of enclosing drafts, one to Oppenheimer who is in charge of one important group, and the other to General Groves which he can in turn take up with several groups. I group it in this way to avoid the necessity of numerous letters,, and I think these two will take care of it.

I will appreciate it if you will have these typed and lay them before the President. If this is done after I leave, which will be on Wednesday, they can be delivered to Dr. Conant at 1530 P Street, who will take care of them for me.

  
V. Bush.

DRAFT OF LETTER

Dr. J. R. Oppenheimer  
P. O. Box 1663  
Santa Fe, New Mexico

My dear Dr. Oppenheimer:

I have recently reviewed with Dr. Bush the highly important and secret program of research, development and manufacture with which you are familiar. I was very glad to hear of the excellent work which is being done in a number of places in this country under the immediate supervision of General L. R. Groves and the general direction of the Committee of which Dr. Bush is Chairman. The successful solution of the problem is of the utmost importance to the national safety, and I am confident that the work will be completed in as short a time as possible as the result of the wholehearted cooperation of all concerned.

I am writing to you as the leader of one group which is to play a vital role in the months ahead. I know that you and your colleagues are working on a hazardous matter under unusual circumstances. The fact that the outcome of your labors is of such great significance to the nation requires that this program be even more drastically guarded than other highly secret war developments. I have therefore given directions that every precaution be taken to insure the security of your project and feel sure that those in charge will see that these orders are carried out. You are fully aware of the reasons why your own endeavors and those of your associates must be circumscribed by very special restrictions. Nevertheless, I wish you would express to the scientists assembled with you my deep appreciation of their willingness to undertake the tasks which lie before them in spite of the dangers and the personal sacrifices. I am sure we can rely on their continued wholehearted and unselfish labors. Whatever the enemy may be planning, American science will be equal to the challenge. With this thought in mind, I send this note of confidence and appreciation.

Though there are other important groups at work, I am writing only to you as the leader of the one which is operating under very special conditions, and to General Groves. While this letter is secret, the contents of it may be disclosed to your associates under a pledge of secrecy.

Very sincerely yours,



DRAFT OF LETTER

Brigadier General L. R. Groves,  
Room 5120, New War Department Building,  
21st and Virginia Avenue, N.W.  
Washington, D.C.

My dear General Groves:

I have recently reviewed with Dr. Bush the highly important and secret program of research, development and manufacture with which you are familiar. I was very glad to hear of the excellent work which is being done in a number of places in this country under your immediate supervision and the general direction of the Committee of which Dr. Bush is Chairman. The successful solution of the problem is of the utmost importance to the national safety, and I am confident that the work will be completed in as short a time as possible as the result of the wholehearted cooperation of all concerned.

I am writing to you as the one who has charge of all the development and manufacturing aspects of this work. I know that there are several groups of scientists working under your direction on various phases of the program. The fact that the outcome of their labors is of such great significance to the nation requires that this project be even more drastically guarded than other highly secret war developments. As you know, I have therefore given directions that every precaution be taken to insure the security of your project. I am sure the scientists are fully aware of the reasons why their endeavors must be circumscribed by very special restrictions. Nevertheless, I wish you would express to them my deep appreciation of their willingness to undertake the tasks which lie before them in spite of the possible dangers and the personal sacrifices involved. In particular, I should be glad to have you communicate the contents of this letter to the leaders of each important group. I am sure we can rely on the continued wholehearted and unselfish labors of those now engaged. Whatever the enemy may be planning, American Science will be equal to the challenge. With this thought in mind, I send this note of confidence and appreciation.

Very sincerely yours,

~~SECRET~~  
Franklin D. Roosevelt Library

DECLASSIFIED

AEC to Director PDRL

2-12-70

PSF  
Bush  
Subject File  
August 23, 1943.

MEMORANDUM for The President:

Tubealloy - Interchange with the British.

We await your instructions regarding interchange with the British on this subject as a result of correspondence with Sir John Anderson recently placed in your hands through Mr. Hopkins. A report on the present status of the whole project has just been forwarded to General Marshall.

The next steps, if you approve the correspondence regarding interchange, are to convene a combined committee, which will lay down rules for security and arrange conferences between scientific groups as needed to expedite the program fully.

I suggest, before you leave the Prime Minister, one step to accelerate matters. It would help if a top British scientist, accepted and of sound judgment, could be sent here as chief liaison under Sir John Anderson, to help make arrangements for the committee's work. He should be of the caliber of Sir Henry Dale or Sir Henry Tizard, and not one of the group working experimentally on a single phase of the problem.

I hasten to make this suggestion for the following reason. In previous negotiations difficulty was encountered because the British representative was an industrialist, Mr. Akers of International Chemical Industries. This same man is now here, apparently to make similar arrangements. He recently, and without consulting us, brought four eminent British scientific workers here for interchange. As we cannot use them until the combined committee has laid down the rules, they are likely to think us reluctant to interchange, whereas the exact opposite is true and we are anxious to get appropriate interchange going in an orderly fashion, so that relations will not this time become tangled. Akers is a very able man, but not the one to handle this matter.

We will proceed promptly with the whole affair on receiving your instructions.



V. Bush.

THE WHITE HOUSE  
WASHINGTON

PRIME MINISTER.

Tube Alloys.

1. May I send the President the attached set of telegrams in amplification of what you told him about the visit by Sir Edward Appleton?
2. In the Articles of Agreement signed at Quebec it was stated that the United States members of the Combined Policy Committee should be the Secretary of War, Dr. Bush and Dr. Conant. Mr. Stimson spoke to you about this after luncheon yesterday, but I did not hear clearly what he said. Do you wish to make any record of his remarks or inform the Lord President?

1.17.17.

9.9.43

Mr. Hopkins to see first.

PSF

Bush

Subject File

48

21

PARAPHRASE OF TELEGRAM TO PRIME MINISTER FROM LORD PRESIDENT.  
August 28, 1943.

Tube Alloys. Reference your WELFARE 450.

I am distressed at this report on Akers, who has rendered most excellent service as our Chief Executive on Tube Alloys and about whose integrity and ability I have not the slightest doubt. During negotiations in Washington there was a suggestion that the United States authorities would not regard Akers as a suitable person to represent us on the Combined Policy Committee, an attitude which could be understood having regard to the fact that his work lies in the field of technical rather than political direction. No objection was however then raised to our using him for the sort of purpose for which he is now in the United States - namely, to co-ordinate the views and activities of the representatives of our individual scientific groups and to act as Chief Technical Assistant and Adviser to our representatives on the Policy Committee.

I should add that the four eminent British Scientific workers were sent over on my instructions. This step was clearly necessary if time was not to be unnecessarily wasted and was in accordance with the following passage taken from the 5th paragraph of Dr. Bush's letter of the 6th August to me:-

"As a matter of procedure the first step, after the formation of the Policy Committee, would certainly seem to be the presentation to that Committee by American and British Scientists of the overall picture of the current situation in their respective countries and the plans for the future: ~~On~~ the basis of the evidence thus presented the Policy Committee would agree as to the method of providing specific interchange to carry out the provisions of the agreement."

Evidently however Akers's inclusion among our representatives on Tube Alloys in Washington has caused trouble in the past and is likely to continue to do so, and this is a fact which, in the interests of the prosecution of that project as a joint enterprise, we cannot afford to ignore. I accordingly suggest for your consideration that you should propose to the President that Sir Edward Appleton should at once go out to Washington on a short visit. The purpose of his visit would be first to help to arrange



for launching of the Combined Committee, and secondly to submit to me recommendations regarding any adjustments which he may consider that the establishment of the Combined Committee makes necessary in our present arrangements for the technical direction of our work on the project.

In the latter connection an important factor to which we have every right to give full consideration is the general cohesion and contentment of our workers on the project. I doubt whether the recommendations which Appleton will have to make will affect anything more than our representation on the technical level in Washington, but even in that respect he will have to bear in mind the position of our team in Canada who have hitherto been accustomed to look to Akers for technical direction. I do not think that either Dale or Tizard would be suitable for this Mission, indeed I am convinced that Appleton is the only man for it. Besides having the scientific eminence apparently required, he is also the permanent Head of the Department of Scientific and Industrial Research, of which the Directorate of Tube Alloys is a part. He thus has some general responsibility in the matter and also intimate knowledge of all the personalities involved on our side. I have every reason to believe that he will be acceptable to the American Scientists, with whom he has always been on the best of terms. I should be grateful if you could telegraph as soon as possible whether Appleton should go.

We cannot possibly hope to be able to conceal from Akers the fact that objection has been taken to him from the American side, though we need not, of course, make any specific mention of Bush.

DECLASSIFIED

AEC to Director FDRL

2-12-70

COPY

                     FOR PRIME MINISTER FROM LORD PRESIDENT.  
September 2, 1943.

There is an excellent opportunity of sending Appleton by fast boat due to reach New York towards the end of next week, but this will involve his leaving London tomorrow night September 3rd.

After careful consideration I have come to the conclusion that, even if immediate difficulties about Akers's personal position should be cleared up otherwise, it would still be very valuable for Appleton to pay a visit to Washington at this stage. Combining as he does a general knowledge of the whole field of Anglo-American co-operation on scientific matters with a particular responsibility, as head of the D.S.I. R.N. for the scientific side of tube alloys, he is better qualified than anyone to get on to such terms with the American scientists in tube alloys as to ensure that there shall be no further difficulties or misunderstandings. I have accordingly decided to take advantage of this special opportunity and have asked Appleton to leave tomorrow.



DECLASSIFIED

AEC to Director FORL

2-12-70

COPY

                     FOR LORD PRESIDENT FROM PRIME MINISTER.  
September 2, 1943.

I am glad Appleton is coming.

EXTRACT FROM 'WHO'S WHO'

APPLETON, Sir Edward Victor, K.C.B. cr. 1941; M.A., D.Sc., Hon. L.L.D. (Aberdeen), F.R.S. 1927; Secretary Department of Scientific and Industrial Research since 1939; b 6 Sep. 1892; s. of Peter Appleton, Bradford, Yorks; m. Jessie, d. of late Rev. J. Longson; two d. Educ. Hanson School, Bradford; St. John's College, Cambridge (Scholar and Exhibitioner); Natural Science Tripos, Parts I and II (Physics), 1913 and 1914; Wiltshire Prizeman 1913; Hutchinson Research Student, 1914. Served European War 1914-18, West Riding Regt. and Capt. R.E.; Assistant Demonstrator in Experimental Physics, Cavendish Laboratory, 1920; sub-lector, Trinity College, 1922; Wheatstone Professor of Physics, University of London, 1924-36; Jacksonian Professor of Natural Philosophy, Cambridge University, 1936-39; formerly Fellow of St. John's College Cambridge; Chairman of British National Committee for Radio-telegraphy; Morris Liebmann Memorial Prizeman (1929) and Vice-President (1932) American Inst. Radio Eng.; Hughes Medallist of Royal Society, 1933; President International Scientific Radio Union. Publications: various original papers on electricity and the scientific problems of wireless-telegraphy. Address: 4, Exeter House, S.W.15. Club: Athenaeum.

*Amo*

THE WHITE HOUSE  
WASHINGTON

November 8, 1943.

Dear Jim:-

I am sorry to trouble you  
but do you mind looking into this  
man Lowen again?

As ever yours,

*"F.D.R."*

Dr. James B. Conant,  
President, Harvard University,  
Cambridge,  
Massachusetts.

(Enclosure)

Letter from Irving S. Lowen, Physics Department,  
New York University, NYC, 10/29/43, to Miss  
Tully, with letter of same date for the Presi-  
dent, in re possibility of the enemy's completing  
his Uranium project before ours is completed  
and before he is defeated. Desires interview  
to discuss the matter.

Miss Grace Tully <sup>pick up</sup> One Lane St.  
Dear Miss Tully: <sup>best</sup>

Once again I must ask your kindness  
to see that the enclosed letter is delivered  
to the President. I understand how you  
must be assailed on all sides by people  
stressing the urgency of their own particular  
project, so I will not say anything about  
the urgency of this matter. But privately,  
I think that for every minute the delivery  
of this to the President is speeded up, so  
many times must your name be blessed  
by all the Saints in Heaven.

Sincerely yours

Irene S. Lowen

Saturday Dec. 4.

One Lane St.  
New York, N.Y.

The Hon. Franklin D. Roosevelt.

Dear Mr. President:

As a result of your request to him, based  
I gather on my letter to you, I am seeing Mr.  
Grant Wed. Dec. 8 in New York.

Unfortunately, some of the leading  
scientists in the Uranium project, fear that  
the Germans are about to use the weapon  
we all fear. Whether they are or not, opinion  
still persists that we are less prepared than  
we might be with different scientific and  
administrative leadership on our project.

In case you have not yet seen it,  
I am enclosing a N.Y. Times clipping which  
it is feared may not be bluff.

I would not take this step, before the  
interview with Grant, if I did not believe he  
lacks competence in the matter, as I would  
hesitate to level such a charge against  
any one, except in the face of this eventuality,

of the danger to the country.

I, again, respectfully repeat my request for an interview with yourself. I am prepared to bring objective evidence, easily assayed, I think, to enable you to judge whether or not there is any validity in the charge that bad administration has resulted in policies delaying the work in the past and likely to delay its completion in the future unless remedied.

Very truly yours

Irving S. Lowen.

P. S. My home telephone number is Chelsea 3-1805.

I may also be reached on a message left at New York University, Washington Sq. East.

The Telephone is Spring 7-2000 Ext 522 or 391.



# OF BOM

*N.Y. Times*

## Huge Reprisal Blow Threatened by Nazis

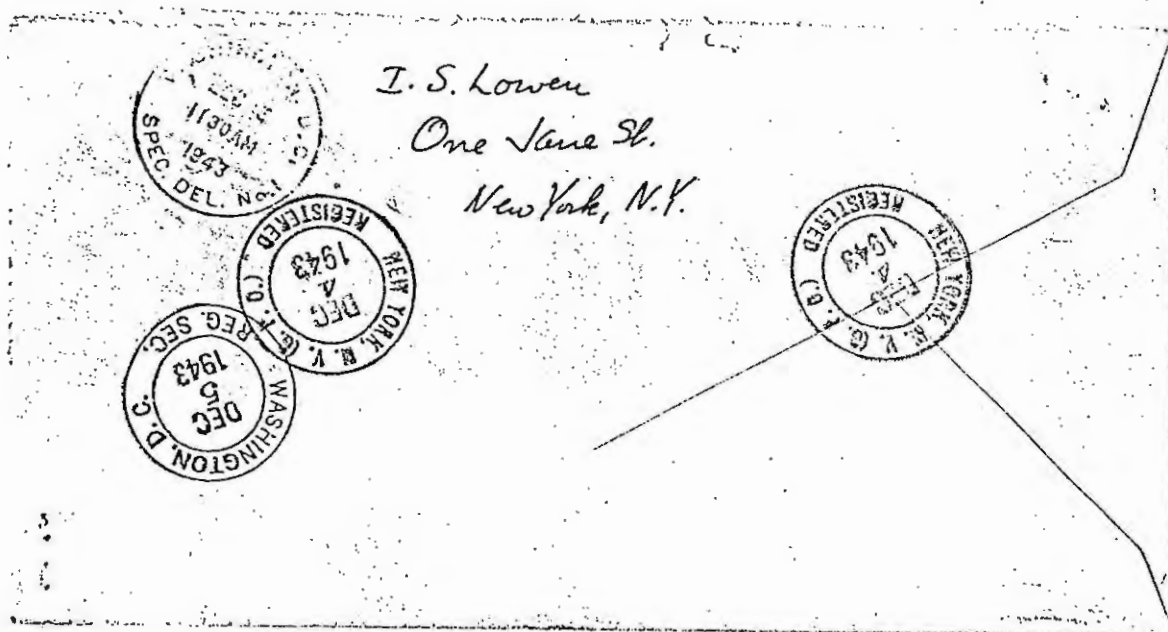
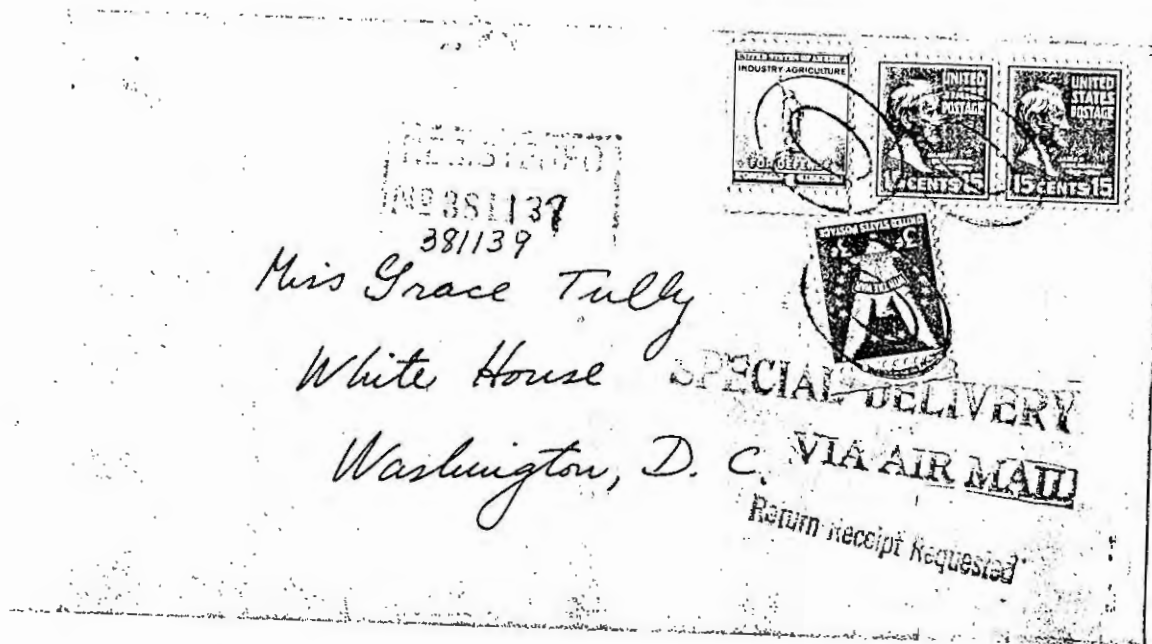
By The Associated Press.

LONDON, Dec. 3 — Again threatening retaliation for the air war upon Germany, the Berlin radio said today that the German High Command "intends by one fell, drastic stroke to end the unbridled mass murder," and added that "mankind is not far from the point where it can at will blow up half the globe."

The broadcast quoted the periodical Reich as saying that "the commencement of retaliation no longer depends on technical matters, but solely on the object which is to be attained by it."

"The retaliation," it continues, "will be so powerful and will be started at such a psychologically opportune moment as to influence the development of the war. It would be superfluous to retaliate for ruins with ruins. The sense of retaliation will find quite a different and surprising expression spiritually as well as politically."

### RUSSIANS TIGHTEN



PSF 2m Cover "L" 3-43

OFFICE FOR EMERGENCY MANAGEMENT  
NATIONAL DEFENSE RESEARCH COMMITTEE  
OF THE  
OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT



JAMES B. CONANT, Chairman  
RICHARD C. TOLMAN, Vice Chairman  
ROGER ADAMS  
CONWAY P. COE  
KARL T. COMPTON  
FRANK B. JEWETT  
CAPT. LYBRAND P. SMITH  
MAJ. GEN. CLARENCE C. WILLIAMS  
IRVIN STEWART, Executive Secretary

1530 P STREET NW.  
WASHINGTON, D. C.  
Zone 25

THE WHITE HOUSE  
November 17, 1943

Nov 18 8 32 AM '43

RECEIVED

The President  
The White House  
Washington, D. C.

My dear Mr. President:

Following your directions, contained in your brief  
note of November 8, I shall endeavor to see Mr. Irving S.  
Lowen at the earliest moment and have a talk with him about  
the matters which he referred to in his letter of October 29  
and which you referred to me. I will report to you in  
writing the result of my conversation.

Very sincerely yours,

James B. Conant

PSF Gen Cones "L"  
3-43

OFFICE FOR EMERGENCY MANAGEMENT  
OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT

1530 P STREET NW.  
WASHINGTON, D. C.

Zone 25

VANNEVAR BUSH  
Director

*File  
Confidential*

December 30, 1943

*Declassified by  
AEC It. to  
Director J.E.C.H.  
2-12-76*

The President  
The White House  
Washington, D. C.

My dear Mr. President:

I am returning herewith the letters sent you by Mr. Irving S. Lowen shortly before you went away. You may recall that you asked me to see this man once again on your behalf. This I did a few weeks ago. I discovered, however, that he had already been in Washington and had seen numerous people, including Mr. B. M. Baruch. I understand from my conversation subsequently with Mr. Baruch that he is taking care of Mr. Lowen.

I should like to take this opportunity to tell you that in my opinion, based on intimate knowledge of this whole project, everything is going as well as is humanly possible. I believe we are very fortunate in having in General Groves, the Director of the enterprise, a man of unusual capability and force. Criticisms like Mr. Lowen's are based on an incomplete view of the total picture on the one hand and on the other represent the inevitable emotional reactions of human beings involved in an enterprise of this sort.

Very sincerely yours

*James B. Conant*  
James B. Conant

Enclosures



This document contains information affecting the national defense of the United States within the meaning of the Espionage Act, U. S. C. 50; 81 and 82. Its transmission or the revelation of its contents in any manner to an unauthorized person is prohibited by law.

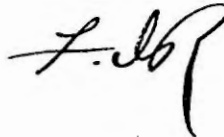
THE WHITE HOUSE  
WASHINGTON

November 8, 1943.

Dear Jim:-

I am sorry to trouble you  
but do you mind looking into this  
man Lowen again?

As ever yours,



Dr. James B. Conant,  
President, Harvard University,  
Cambridge,  
Massachusetts.

(Enclosure)

NEW YORK UNIVERSITY  
Physics Department  
Washington Square  
New York, N.Y.

October 29, 1943

Miss Grace Tully  
The White House  
Washington, D.C.

Dear Miss Tully:

In an interview with the President this past summer, he instructed me, should I desire to send him a personal message, intended for his eyes only, to address a covering note to you with the letter for him enclosed in another envelope. Accordingly, may I request that the enclosed letter be delivered to him as soon as conveniently possible.

Very truly yours,

*Irving S. Bowen*  
Irving S. Bowen



NEW YORK UNIVERSITY  
Physics Department  
Washington Square.  
New York, N.Y.

October 29, 1943

Honorable Franklin D. Roosevelt  
The White House  
Washington, D.C.

Dear Mr. President:

I am compelled to address this note to you, the first since the interview you so kindly granted me at mid-summer, because of my inability to quiet my fears that the country is still in danger through the possibility of the enemy's completing his Uranium project before ours is completed and before he is defeated.

These fears are enhanced through the conviction that there has been no material improvement in those conditions on the project which caused me to seek that interview. These conditions, in the opinion of a number of people, constitute not merely a menace to the present safety of the country but to its future welfare as well, and for the same reasons.

In the interview mentioned above, you may recall you referred me to Mr. Conant, mentioning your inability to judge these technical matters. I feel, however, that the chief difficulties are largely administrative rather than technical and may be understood without going into technical details.

For these reasons, I request, if possible, another interview of sufficient length to permit a presentation of a view of those conditions which many on the project feel to be a danger to the country. I feel a personal interview rather than a written report, would be desirable, since the former would permit a more vivid picture. Should another kind of report, if any, be preferred however, may I express a wish that you consider my services at your disposal.

Page 2

Finally, I should like to add, as the above address indicates, that I have been compelled to return to New York University to resume my regular duties there and may be reached there whenever desired.

Sincerely yours,

*Irving S. Lowen*  
Irving S. Lowen

3526

27

THE WHITE HOUSE

WASHINGTON

September 29, 1944

MEMORANDUM FOR

DR. V. BUSH

Many thanks for your letter of August twenty-eighth, together with the accompanying report on the operations of The Office of Scientific Research and Development.

I am delighted to have this and I feel that you are absolutely on the right track.

I am referring the recommendation for termination when peace comes to the Secretary of War and the Secretary of the Navy personally, and I will let you know as soon as I hear.

F. D. R.

100-1-1 Bush folder 3-44

Subj. File

RECEIVED  
OCT 1 1944

Bush folder 3-44

THE WHITE HOUSE  
WASHINGTON

September 29, 1944

CL 1  
9-12-44  
MEMORANDUM FOR

THE SECRETARY OF WAR

and

THE SECRETARY OF THE NAVY

(with copy of Cdr 8/28/44) — 3527  
hms

Please read this very interesting report of Dr. Bush in regard to The Office of Scientific Research and Development and its termination, and let me have your judgment, especially in regard to pages 57 to 61.

F. D. R.

Original of report and copy of Dr. Bush's let to the P 8/28/44 sent to SecWar 9/29/44 - Scaled in envelope and given to Major Oulie to deliver to the Secretary's office personally.

OFFICE FOR EMERGENCY MANAGEMENT  
OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT

1530 P STREET NW.  
WASHINGTON 25, D. C.

VANNEVAR BUSH  
Director

August 28, 1944.

The President,  
The White House,  
Washington, D.C.

Dear Mr. President:

I transmit herewith a further report on the operations of the Office of Scientific Research and Development. It touches on some highlights of accomplishment, and recites changes in organization.

There is a section on plans for termination, for OSRD is a war agency, and should plan to go out of existence in an orderly manner at the proper time. I hope you will find opportunity to look at this section, for I would like to announce the plans to our personnel soon, and I trust you will caution me if you see anything wrong with the plans. I have taken them up with the Secretaries of War and Navy, and feel sure I will have their assent.

I have included a section on military organization for research, for my experience of the past four years has left strong convictions as to the manner in which it should be conducted post-war. Undoubtedly I will be called on to say what I think on this subject at some time, and I believe that my thinking on the matter is not far from your own. Still I would appreciate it enormously if you should find time to consider my statements on this subject and to advise me where you think I am on the wrong track. The sections of the report which deal with termination and post-war organization bear tabs for ready reference.

It is pleasant indeed to look forward to the time when it will be possible to drop off my present burden, although it has certainly been a privilege and a pleasure to serve under your command. You may be assured that, while we plan for termination, we will not leave anything undone which may help in bringing the whole war to an early and successful conclusion.

Respectfully yours,



V. Bush,  
Director.



*file*  
~~SECRET~~  
~~SECRET~~  
WAR DEPARTMENT  
WASHINGTON

*Mr. William J. Donovan* 3-44  
0

October 18, 1944.

Dear Mr. President:

In accordance with your request, I have read Dr. Bush's long report with the greatest interest.

I have especially noted his proposal for dealing with the Office of Scientific Research and Development after the defeat of Germany. Furthermore, the appropriate Army officers have had extended conferences with Dr. Bush as to the working out of this program.

It will require careful handling to be sure that the scientific effort in the Office of Scientific Research and Development will continue to be fully effective in helping to bring about the final defeat of Japan, but those who have the particular responsibility in the Army are confident that Dr. Bush's plan can be so worked out in practice as to accomplish this result.

Faithfully yours,

*Henry L. Stimson*  
Secretary of War.

The President,

The White House.

Franklin D. Roosevelt Library  
DECLASSIFIED  
DOD DIR. 5200.9 (9/27/58)

Date- 3-19-59

Signature- *Carl L. Spear*

~~SECRET~~



R.  
102  
February 25, 1944.

MEMORANDUM FOR THE PRESIDENT: *Roosevelt*

I suggest that you might sometime ask Mr. Conant to see Professor E. Wigner, Dr. L. Szilard, and Professor E. Fermi, who are with the Metallurgical Laboratories, University of Chicago, to tell about their work which has such important implications for the future.

E. R.

TSF Mr. Vannavar Bush Folder  
Subject File 3-44

OFFICE FOR EMERGENCY MANAGEMENT

OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT

1530 P STREET NW.

WASHINGTON, D. C.

Washington 25, D.C.

THE WHITE HOUSE

MAR 9

RECEIVED

PSF

March 7, 1944.

Subject File

VANNEVAR BUSH  
Director

The President,  
The White House,  
Washington, D.C.

Dear Mr. President:

I return the letter from Irving S. Lowen, enclosed with your note of March second. This is the young man who is much stirred up about the special project.

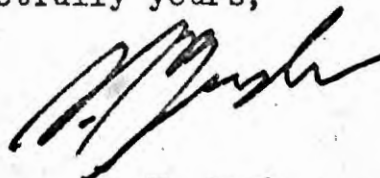
Dr. Conant tells me that you mentioned this matter in passing last Friday, and that he told you that Mr. Baruch had been brought into the subject. All three men noted in the memorandum which I return have now been seen.

Conant had a long talk in Chicago with Fermi and Wigner, and tells me they are quite satisfied with the arrangements now in effect and do not share Lowen's views. I spent about all day with Szilard yesterday. His criticisms boil down to the feeling that his group have not been fully used. There has, of course, been a reluctance to introduce scientists of foreign origin to the full knowledge of a matter of potentially great military importance. There is also a matter of early patent applications which has its difficulties.

My conclusion is that there have been no more missteps or delays than ought to be anticipated on a matter of this novelty and complexity, and that the organization is sound and in capable hands.

I suggest that Lowen be advised to see Mr. Baruch again. Baruch will turn to Conant if he needs further information.

Respectfully yours,



V. Bush,  
Director.



THE WHITE HOUSE  
WASHINGTON

March 10, 1944.

MEMORANDUM FOR

MRS. ROOSEVELT:

\*PP72

*Return to  
President*

FOR YOUR INFORMATION AND  
PLEASE RETURN FOR MY FILES.

F.D.R.

*W. H. L. R.  
Loraine L. L. R.  
L. R. L. R.*

THE WHITE HOUSE  
WASHINGTON

February 25, 1944.

MEMORANDUM FOR THE PRESIDENT:

I suggest that you might sometime ask Mr. Conant to see Professor E. Wigner, Dr. L. Szilard, and Professor E. Fermi, who are with the Metallurgical Laboratories, University of Chicago, to tell about their work which has such important implications for the future.

E. R.

Dear Mrs. Roosevelt:

The purpose of this note is twofold: first to summarize the present situation, so far as I know it, in those matters you have been so kind as to show an interest in, and second, to express again my gratitude for the great aid you so generously extended to me in the fight for an improvement in these affairs.

As far as the situation at present is concerned, from the little I have been able to gather, there has been no appreciable improvement. I gather that the prevailing opinion of the scientific and technical personnel is still the same: that the war may be ended before either side develops the weapon, or indeed that we may develop it first but that in any event unjustifiable risks have been and are being taken.

Also, in this connection, I seem to be pretty effectively stopped from doing any more fighting. This has been accomplished thru my being cut off from all information via secrecy regulations which take effect against me since I no longer have any special connection with these projects. For the time being I do not see any more I can do to continue the fight and since there seems no prospect of the

Feb 15, 1944

One Square St.

New York, N. Y.

2/24/44

situation changing in that respect, it seems I am more or less out of the running for good.

Should you have any reason to desire more current information than I can supply, I think the following men would probably be happy to come to Washington at your request to supply it. Their names & addresses are

<u>Prof. E. Wigner</u> x	} Metallurgical laboratories Univ. of Chicago Chicago, Ill.
<u>Dr. L. Szilard</u> x	
<u>Prof. E. Fermi</u> x	

The first two men were responsible for starting the Chicago project, having proposed the idea to the President via Prof. Einstein. The third, a Nobel Prize winner, discovered the phenomena on which the development is based. The first man, Wigner, is leaving the project in July.

In conclusion, may I say, that if there should be any way in which I might be of use in this matter, I stand ready to do anything I can. Finally, if in any way I can be of service to yourself, may I express the hope that you confer the great honor of calling on me.

Most sincerely yours

Irving S. Bowen



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C O P Y

ZONE 25

~~SECRET~~

DECEMBER 30, 1943

THE PRESIDENT  
THE WHITE HOUSE  
WASHINGTON, D. C.

MY DEAR MR. PRESIDENT:

I AM RETURNING HERewith THE LETTERS SENT YOU BY MR. IRVING S. LOWEN, SHORTLY BEFORE YOU WENT AWAY. YOU MAY RECALL THAT YOU ASKED ME TO SEE THIS MAN ONCE AGAIN ON YOUR BEHALF. THIS I DID A FEW WEEKS AGO. I DISCOVERED, HOWEVER, THAT HE HAD ALREADY BEEN IN WASHINGTON AND HAD SEEN NUMEROUS PEOPLE, INCLUDING MR. B. M. BARUCH. I UNDERSTAND FROM MY CONVERSATION SUBSEQUENTLY WITH MR. BARUCH THAT HE IS TAKING CARE OF MR. LOWEN.

I SHOULD LIKE TO TAKE THIS OPPORTUNITY TO TELL YOU THAT IN MY OPINION, BASED ON INTIMATE KNOWLEDGE OF THIS WHOLE PROJECT, EVERYTHING IS GOING AS WELL AS IS HUMANLY POSSIBLE. I BELIEVE WE ARE VERY FORTUNATE IN HAVING IN GENERAL GROVES, THE DIRECTOR OF THE ENTERPRISE, A MAN OF UNUSUAL CAPABILITY AND FORCE. CRITICISMS LIKE MR. LOWEN'S ARE BASED ON AN INCOMPLETE VIEW OF THE TOTAL PICTURE ON THE ONE HAND AND ON THE OTHER REPRESENT THE INEVITABLE EMOTIONAL REACTIONS OF HUMAN BEINGS INVOLVED IN AN ENTERPRISE OF THIS SORT.

VERY SINCERELY YOURS

JAMES B. CONANT

ENCLOSURES

For the President

File 94/3/44

THE WHITE HOUSE  
WASHINGTON

March 10, 1944.

MEMORANDUM FOR

MRS. ROOSEVELT:

FOR YOUR INFORMATION AND  
PLEASE RETURN FOR MY FILES.

F.D.R.

Letter from Dr. V. Bush, Director, Office of Scientific Research and Development, 3/7/44, to the President, returning letter which Mrs. Roosevelt received from Irving S. Lowen, 1 Jane St., NYC, 2/15/44, together with copy of letter which Dr. James B. Conant addressed to the President under date of 12/30/43, in reference to a certain secret project. Dr. Bush suggests that Mr. Lowen be advised to see Mr. Baruch again.

March 2, 1944.

Dear Van:

This young man has bothered us twice before and I think Jim Conant has seen him. I fear, too, that he talks too much. Do you think we should refer the matter to Conant?

Always sincerely,

Dr. Vannevar Bush,  
Office of Scientific Research and  
Development,  
1530 P Street, N. W.,  
Washington, D. C.

Letter which Mrs. Roosevelt received from Irving S. Lowen, 1 Jane St., NYC, 2/15/44, in re project, the name of which he does not mention, but suggests that Professor E. Wigner, Dr. L. Szilard and Professor E. Fermi, all of the Metallurgical Laboratories of the University of Chicago, would be willing to come to Washington to discuss the matter. Attached is Mrs. Roosevelt's memorandum of 2/25/44 to the President reading "I suggest that you might sometime ask Mr. Conant to see Professor E. Wigner, Dr. L. Szilard, and Professor E. Fermi, who are with the Metallurgical Laboratories, University of Chicago, to tell about their work which has such important implications for the future".

*See Mrs. from Lowen filed - See Case "d" dr 5-43*

CHAMBERS OF  
JUSTICE FELIX FRANKFURTER

PSF  
Supreme Court of the United States  
Washington, D.C.

Frankfurter folder 3-44  
New Milford, Conn.

July 10, 1944

Dear Frank:

After my recent talk with you it occurred to me that, if by chance it should not be possible for you to see Professor Niels Bohr, you might like to have on paper the direction of his thoughts, in so far as these could be put on paper. Here is the memorandum which he wrote exclusively for this use by me. Indeed, as I told you, he has not spoken to a soul about these aspects of the matter to anyone except me on this side of the ocean - not even to the Danish Minister, whom I met he is. The memorandum is in his able but quaint English, and of course couched in the most abstract language for security reasons. Not even I have made a



Supreme Court of the United States  
Washington, D. C.

CHAMBERS OF  
JUSTICE FELIX FRANKFURTER

copy of this memorandum.

Since leaving Washington I have learned that Professor Boh's stay here has been extended. He will be in Washington through Saturday, July 15.

But I hope that you won't have to stew in that Hell's Hole. Holmes used to speak of the "peculiar" heat of Washington. It sure is "peculiar"

from all that one can gather from the press, the visit of Grand Arc Clemenceau came off well. And what grand news from the front!

Take care of yourself! Marion and I send you affectionate regards  
Ever yours  
F.F.

July 3rd 1944.

MEMORANDUM.

The project of releasing, to an unprecedented scale, the energy bound in matter is based on the remarkable development of physical science in our century which has given us the first real insight in the interior structure of the atom.

This development has taught us that each atom consists of a cluster of electrified corpuscles, the so-called electrons, held together by the attraction from a nucleus which, although it contains practically the whole mass of the atom, has a size extremely small compared with the extension of the electron cluster.

By contributions of physicists from nearly every part of the world, the problems of the electron configuration within the atom were in the course of relatively few years most successfully explored and led above all to a clarification of the relationship between the elements as regards their ordinary physical and chemical properties.

In fact all properties of matter like hardness of materials, electric conductivity and chemical affinities, which through the ages have been exploited for technical developments to an ever increasing extent, are determined only by the electronic configuration and are practically independent of the intrinsic structure of the nucleus.

This simplicity has its root in the circumstance that by exposure of materials to ordinary physical or chemical agencies, any change in the atomic constitution is confined to distortion or disruption of the electron cluster while the atomic nuclei are left entirely unchanged.

The stability of the nuclei under such conditions is in fact the basis for the doctrine of the immutability of the elements which for so long has been a fundament for physics and chemistry. A whole new epoch of science was therefore initiated by the discovery that it is possible by special agencies, like the high speed particles emitted by Radium, to produce disintegrations of the atomic nuclei themselves and thereby to transform one element into another.

The closer study of the new phenomena revealed characteristic features which differ most markedly from the properties of matter hitherto known, and above all it was found that nuclear transmutations may be accompanied by an energy release per atom millions of

times larger than the energy exchanged in the most violent chemical reactions.

Although at that stage no ways were yet open of releasing for practical purposes the enormous energy stored in the nuclei of atoms, an immediate clue was obtained to the origin of the so far quite unknown energy sources present in the interior of the stars, and in particular it became possible to explain how our sun has been able through billions of years to emit the powerful radiation upon which all organic life on the earth is dependant.

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The rapid exploration of this novel field of research in which international co-operation has again been most fruitful led within the last decenniums to a number of important discoveries regarding the intrinsic properties of atomic nuclei and especially revealed the existence of a non-electrified nuclear constituent, the so-called neutron, which when set free is a particularly active reagens in producing nuclear transmutations.

The actual impetus to the present project was the discovery made in the last year before the war, that the nuclei of the heaviest elements like Uranium by neutron bombardment, in the so-called fission process, may split in fragments ejected with enormous energies, and that this process is accompanied by the release of further neutrons which may themselves effect the splitting of other heavy nuclei.

This discovery indicated for the first time the possibility, through propagation of nuclear disintegrations from atom to atom, to obtain a new kind of combustion of matter with immense energy yield. In fact a complete nuclear combustion of heavy materials would release an energy 100.000.000 times larger that obtainable by the same amount of chemical explosives.

This prospect not only at once attracted the most wide-spread interest among physicists, but of its appeal to the imagination of larger circles I have vivid recollections from my stay in U.S.A. in the spring of 1939 where, as guest of the Institute of Advanced Studies in Princeton, I had the pleasure to participate together with American colleagues in investigations on the mechanism of the fission process.

Such investigations revealed that among the substances present in natural ores, only a certain modification of Uranium fulfils the conditions for nuclear combustion. Since this active substance always occurs mixed with a more abundant, inactive Uranium modification, it was therefore realized that in order to produce devastating explosives, it would be necessary to subject the available materials to a treatment of an extremely refined and elaborate character.

The recognition that the accomplishment of the project would thus require an immense technical effort, which might even prove impracticable, was at that time, not least in view of the imminent threat of military aggression, considered as a great comfort since it would surely prevent any nation from staging a surprise attack with such super weapons.

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Any progress on nuclear problems achieved before the war was, of course, common knowledge to physicists all over the world, but after the outbreak of hostilities no further information has been made public, and efforts to exploit nuclear energy sources have been kept as military secrets.

During my stay in Denmark under the German occupation nothing was therefore known to me about the great enterprise in America and England. It was, however, possible, due to connections originating from regular visits of German physicists to the Institute for Theoretical Physics in Copenhagen in the years between the wars, rather closely to follow the work on such lines which from the very beginning of the war was organized by the German Government.

Although thorough preparations were made by a most energetic scientific effort, disposing of expert knowledge and considerable material resources, it appeared from all information available to us, that at any rate in the initial for Germany so favourable stages of the war it was never by the Government deemed worth while to attempt the immense and hazardous technical enterprise which an accomplishment of the project would require.

Immediately after my escape to Sweden in October 1943, I came on an invitation of the British Government to England where I was taken into confidence about the great progress achieved in America and went shortly afterwards together with a number of British colleagues to U.S.A. to take part in the work. In order, however, to conceal my connection with any such enterprise, post-war planning of international scientific co-operation was given as the object of my journey.

Already in Denmark I had been in secret connection with the British Intelligence Service, and more recently I have had the opportunity with American and British Intelligence Officers to discuss the latest information, pointing to a feverish German activity on nuclear problems. In this connection it must above all be realized that if any knowledge of the progress of the work in America should have reached Germany, it may have caused the Government to reconsider the possibilities and will not least have presented the physicists and technical experts with an extreme challenge.



Definite information of preparations elsewhere is hardly available, but an interest within the Soviet Union for the project may perhaps be indicated by a letter which I have received from a prominent Russian physicist with whom I had formed a personal friendship during his many years stay in England and whom I visited in Moscow a few years before the war, to take part in scientific conferences.

This letter contained an official invitation to come to Moscow to join in scientific work with Russian colleagues who, as I was told, in the initial stages of the war were fully occupied with technical problems of immediate importance for the defense of their country, but now had the opportunity to devote themselves to scientific research of more general character. No reference was made to any special subject, but from pre-war work of Russian physicists it is natural to assume that nuclear problems will be in the center of interest.

The letter, originally sent to Sweden in October 1943, was on my recent visit to London handed to me by the Counsellor of the Soviet Embassy who in a most encouraging manner stressed the promises for the future understanding between nations entailed in scientific collaboration. Although, of course, the project was not mentioned in this conversation I got nevertheless the impression that the Soviet Officials were very interested in the effort in America about the success of which some rumours may have reached the Soviet Union.

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Even if every physicist was prepared that some day the prospects created by modern researches would materialize, it was a revelation to me to learn about the courage and foresight with which the great American and British enterprise had been undertaken and about the advanced stage the work had already reached.

What until a few years ago might have been considered a fantastic dream is at the moment being realized in great laboratories erected for secrecy in some of the most solitary regions of the States. There a group of physicists larger than ever before assembled for a single purpose, and working hand in hand with a whole army of engineers and technicians are producing new materials capable of enormous energy release and developing ingenious devices for their most effective use.

To everyone who is given the opportunity for himself to see the refined laboratory equipment and the huge production machinery

it is an unforgettable experience of which words can only give a poor impression. Truly no effort has been spared and it is hardly possible for me to describe my admiration for the efficiency with which the great work has been planned and conducted.

Moreover it was a special pleasure to me to witness the complete harmony with which the American and British physicists, with almost everyone of whom I was intimately acquainted through previous scientific intercourse, were devoting themselves with the utmost zeal to the joint effort.

I shall not here enter on technical details, but one cannot help comparing with the Alchemysts of former days, groping in the dark in their vain efforts to make gold. To-day physicists and engineers are on the basis of well established knowledge directing and controlling processes by which substances far more precious than gold are being collected atom by atom or even built up by individual nuclear transmutations.

Such substances must be assumed to have been abundant in the early stages of our universe where all matter was subject to conditions far more violent than those which still persist in the turbulent and flaming interior of the stars. Due, however, to their inherent instability the active materials now extracted or produced have in the course of time become very rare or even completely disappeared from the household of nature.

The whole enterprise constitutes indeed a far deeper interference with the natural course of events than anything ever before attempted and its impending accomplishment will bring about a whole new situation as regards human resources. Surely, we are being presented with one of the greatest triumphs of science and engineering destined deeply to influence the future of mankind.

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It certainly surpasses the imagination of anyone to survey the consequences of the project in years to come, where in the long run the enormous energy sources which will be available may be expected to revolutionize industry and transport. The fact of immediate preponderance is, however, that a weapon of an unparalleled power is being created which will completely change all future conditions of warfare.

Quite apart from the questions of how soon the weapon will be ready for use and what role it may play in the present war, this situation raises a number of problems which call for most urgent attention. Unless, indeed, some agreement about the control of the use of the new active materials can be obtained in due time, any temporary advantage, however great, may be outweighed by a perpetual menace to human security.



Ever since the possibilities of releasing atomic energy on a vast scale came in sight, much thought has naturally been given to the question of control, but the further the exploration of the scientific problems concerned is proceeding, the clearer it becomes that no kind of customary measures will suffice for this purpose and that, especially the terrifying prospect of a future competition between nations about a weapon of such formidable character can only be avoided through a universal agreement in true confidence.

In this connection it is above all significant that the enterprise, immense as it is, has still proved far smaller than might have been anticipated and that the progress of the work has continually revealed new possibilities for facilitating the production of the active materials and of intensifying their effects.

The prevention of a competition prepared in secrecy will therefore demand such concessions regarding exchange of information and openness about industrial efforts including military preparations as would hardly be conceivable unless at the same time all partners were assured of a compensating guarantee of common security against dangers of unprecedented acuteness.

The establishment of effective control measures will of course involve intricate technical and administrative problems, but the main point of the argument is that the accomplishment of the project would not only seem to necessitate but should also, due to the urgency of mutual confidence, facilitate a new approach to the problem of international relationship.

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The present moment where almost all nations are entangled in a deadly struggle for freedom and humanity might at first sight seem most unsuited for any committing arrangement concerning the project. Not only have the aggressive powers still great military strength, although their original plans of world domination have been frustrated and it seems certain that they must ultimately surrender, but even when this happens, the nations united against aggression may face grave causes of disagreement due to conflicting attitudes towards social and economic problems.

By a closer consideration, however, it would appear that the potentialities of the project as a means of inspiring confidence just under these circumstances acquire most actual importance. Moreover the momentary situation would in various respects seem to afford quite unique possibilities which might be forfeited by a postponement awaiting the further development of the war situation and the final completion of the new weapon.

Although there can hardly be any doubt that the American and British enterprise is at a more advanced stage than any similar

undertaking elsewhere, one must be prepared that a competition in the near future may become a serious reality. In fact, as already indicated, it seems likely that preparations, possibly urged on by rumours about the progress in America, are being speeded up in Germany and may even be under way in the Soviet Union.

Further it must be realized that the final defeat of Germany will not only release immense resources for a full scale effort within the Soviet Union, but will presumably also place all scientific knowledge and technical experience collected in Germany at the disposal for such an effort.

In view of these eventualities the present situation would seem to offer a most favourable opportunity for an early initiative from the side which by good fortune has achieved a lead in the efforts of mastering mighty forces of nature hitherto beyond human reach.

Without impeding the importance of the project for immediate military objectives, an initiative, aiming at forestalling a fateful competition about the formidable weapon, should serve to uproot any cause of distrust between the powers on whose harmonious collaboration the fate of coming generations will depend.

Indeed, it would appear that only when the question is taken up among the United Nations of what concessions the various powers are prepared to make as their contribution to an adequate control arrangement, it will be possible for anyone of the partners to assure themselves of the sincerity of the intentions of the others.

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Of course, the responsible statesmen alone can have the insight in the actual political possibilities. It would, however, seem most fortunate that the expectations for a future harmonious international co-operation which have found unanimous expression from all sides within the United Nations, so remarkably correspond to the unique opportunities which, unknown to the public, have been created by the advancement of science.

Many reasons, indeed, would seem to justify the conviction that an approach with the object of establishing common security from ominous menaces without excluding any nation from participating in the promising industrial development which the accomplishment of the project entails will be welcomed, and be responded with a loyal co-operation on the enforcement of the necessary far reaching control measures.

Just in such respects helpful support may perhaps be afforded by the world wide scientific collaboration which for years has embodied such bright promises for common human striving. On this background personal connections between scientists of different nations might even offer means of establishing preliminary and non-committal contact.

It needs hardly be added that any such remark or suggestion implies no underrating of the difficulty and delicacy of the steps to be taken by the statesmen in order to obtain an arrangement satisfactory to all concerned, but aim only at pointing to some aspects of the situation which may facilitate endeavours to turn the project to lasting advantage for the common cause.

Should such endeavours be successful, the project will surely have brought about a turning point in history and this wonderful adventure will stand as a symbol of the benefit to mankind which science can offer when handled in a truly human spirit.

OFFICE FOR EMERGENCY MANAGEMENT  
OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT  
1530 P STREET NW.  
WASHINGTON, D. C.

VANNEVAR BUSH  
Director

Franklin D. Roosevelt Library

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AFC & Director FDR

2-12-70

March 25, 1943

MEMORANDUM

To: Dr. Vannevar Bush  
From: James B. Conant  
Re: Some thoughts concerning the correspondence between the President and the Prime Minister on S-1

It seems to me of the greatest importance to be sure that the President understands the basic issue. The question is whether or not British representatives shall have full access to plans for the design and construction of the manufacturing plants which we are now building and full knowledge of their operation. There is no contention on the British side, I believe, that this knowledge will be of use to them in the construction and operation of their own plants, since they admittedly do not propose to build such plants during this war. Granting such access to our designs and operations at the manufacturing level can only increase the risks of the enemy learning these secrets and can neither assist the war effort nor allow a more effective use of the joint resources of the two countries.

From the point of view of the security of the United States, knowledge of the design, construction and operation of these plants



March 25, 1943

is a military secret which is in a totally different class from anything the world has ever seen if the potentialities of this project are realized. Therefore, the passing of this knowledge to any ally under conditions whereby the ally cannot profit directly in this war would seem to raise a question of national policy comparable at least to alienation of control of a fortress or strategic harbor. I take it it is not for you or more or the Military Policy Committee to pass judgment on such an issue, but it is our duty to see to it that the President of the United States, in writing, is informed of what is involved in these decisions.

That the British themselves have not been unaware of these implications is evident from two quotations which I supply from their reports. From a draft report of the Maud Technical Committee dated June 23, 1941, which came to us through the courtesy of one member of the Committee unofficially, I quote: ".... It is becoming important to know how far we should rely on American help. There are obvious advantages in locating the plant in Canada or the United States. The creation of such a large plant in this country would necessarily interfere to some extent with other parts of the war effort; .... On the other hand, by having it here, we should keep full control of what may well prove a major weapon; ...."

The President should realize the difference in the industrial situation between the two countries. In England the I.C.I. (Chemical Trust) is very nearly a monopoly and any chemical work the Government should undertake to do of this nature would have to be undertaken by



March 25, 1943

this Company. Therefore, even if the British hold the patent rights in Government hands within the British Empire, this country is certain to profit by exploitation by the British of the knowledge of the manufacture and use of this material, particularly the operation of what we call the power plant process. Again I quote from a British document,- namely, the report of the Maud Committee which came to our hands officially dated July 15, 1941. Appendix 1 - "Nuclear Energy as a Source of Power - Note by Messrs. I.C.I. ....

(1) The use of nuclear energy for power production is being studied in many countries. If this problem is solved, it will lead to new sources of power which will affect the distribution of industry over the world, because this source of energy will be so easily transportable compared with coal, oil or electricity. It is essential that Great Britain should take an active part in this research work so that the British Empire cannot be excluded by default from future developments."

In this country, in contrast to Great Britain, there are a number of powerful competing chemical companies and public opinion would demand that licenses be granted to all of them for the development of these matters in a commercial way. Furthermore, three of the big companies are already involved in this process in different phases. While it is true that the industry of the country might benefit as a whole by the retaining of the knowledge of these matters in the United States, no one company is in a position to profit as is the I.C.I. in Great Britain. From my point of view at least, possible



March 25, 1943

benefit to American industry is a very minor consideration. The major consideration must be that of national security and post-war strategic significance. It should also be pointed out that in the policy making of this United States effort no one with industrial connections has been concerned. Even at the technical level, the only man who has been brought in from industry has been Dr. Murphree of the Standard Oil Development Company of New Jersey, and his company is not in a position to benefit by American rights. At the policy level and in negotiations with the British, the Americans involved had no industrial connection and no reason to favor American industry. On the other hand, the two representatives of England who have been here in the last eight months have both been high in the I.C.I. Councils, and from all we can gather have had important voices in determining the policy in Great Britain. Indeed, in my opinion, this whole controversy might never have arisen if the negotiations had been in the hands of British scientists comparable to yourself and if those British scientists had had the same voice in determining policy in Great Britain as you have had here in the United States.

Referring to the particular documents C.C.W.D. February 27, 1943 1744Z and C.C.W.D. February 27, 1943 1807Z, it seems to me that the history of the British-American relations is essentially accurate. I should dispute the fourth paragraph in the first document signed by the Prime Minister, and I believe this point is important. The American development has proceeded so far that,

except in one or two aspects, there is little to be gained by our bringing British scientists and technicians into the work. In these one or two aspects, we are delighted to make such arrangements, and it is not over these arrangements which the British have raised objection but over our unwillingness to open up the details of our design, construction and manufacture.

It seems to me that all through the negotiations and exchange of information with the British there has run one basic assumption;- namely, that we were both going to continue actively the work. I question very much whether if at some stage we had said that we were going to abandon all scientific activity, the British would still have been willing to pass information to us. I believe they would have quite properly said since you cannot use this information now why take the risks of disseminating it further. We have now reached a stage of development of these processes which presents us with a similar situation at the next stage,- namely, manufacture. Therefore, the basic underlying assumption of collaboration has ceased to exist. At the present stage of the project, the British are not in a position to carry on the work which is at issue,- namely, manufacturing of the material in question. This is the basic fact which destroys the argument in regard to fair play.

As far as the argument as to joint effective use by the American and British scientists is concerned, I would submit that our proposition to Mr. Akers and Dean Mackenzie provided for such maximum use. If the British will accept our terms, the group in Canada

Dr. V. Bush

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March 25, 1943

can be used in connection with one aspect of the manufacturing, and we have already offered to exchange information on the diffusion process, provided they proceed with the erection of a pilot plant.

As to the construction of the bomb, I am of the opinion that it would be in the best interests of the total war effort to have Professor Chadwick and perhaps one or two other British subjects come to the United States and join Dr. Oppenheimer's work, with the understanding they would be subject to the same limitations as to movement and secrecy as the American group. I suggest that the Military Policy Committee authorize such an official invitation, which is only an extension of the invitation already extended to Dr. Chadwick to come over and take part in a series of conferences. Indeed, the suggestion of having Dr. Chadwick come on the basis I have just proposed was discussed informally with Mr. Akers, but, unfortunately, rejected. The decision to make this definite offer should, however, be authorized by the President with the full realization that if the British join us in this phase of the work, they will have gained knowledge about one extremely secret and vital aspect of this new weapon. It might be the equivalent to joint occupation of a fortress or strategic harbor in perpetuity rather than alienating complete control.

*JBC*  
J.B.C.

This document contains information affecting the national defense of the United States within the meaning of the Espionage Act, U. S. C. 50, 41 and 32. Its transmission or the revelation of its contents in any manner to an unauthorized person is prohibited by law.

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AEC &amp; Division FORL

2-12-76

OFFICE FOR EMERGENCY MANAGEMENT

## OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT

1530 P STREET NW.

WASHINGTON, D. C.

VANNEVAR BUSH  
Director

February 24, 1943

To: Dr. V. Bush

From: Carroll L. Wilson

Re: Legal and Policy Basis for OSRD Interchange of Scientific Information with the British

The legal aspects of this interchange are traced in some detail in the accompanying memorandum prepared by Mr. John T. Connor, Chief of our Legal Section, dated February 6, 1943, (Appendix 1).

I shall endeavor to trace briefly the policy basis for this interchange. On September 12, 1940, the Honorable Robert P. Patterson, Assistant Secretary of War, wrote to you (Appendix 2) calling attention to the British Technical Mission under the leadership of Sir Henry Tizard and suggesting that you and your associates contact Sir Henry Tizard and his staff and discuss with them all problems that had to do with national defense.

Subsequently you were informed of the position of the Navy Department and in view of the differences between the positions of the War and Navy Departments, you addressed identical communications to General Marshall and Admiral Stark under date of September 30, 1940, (Appendix 3) requesting that the positions of the Departments be more clearly defined for your guidance to the NDRC in its conduct of interchange with the British Scientific Mission.

Under date of October 24, 1940, you received a letter signed jointly by the Secretaries of War and Navy (Appendix 4) setting forth the joint policy of these two Departments. The following excerpt sets forth this position:

"It is agreed that all devices, instruments, or systems in use, developed for use or under development by the War and Navy Departments will be offered for release to the representatives of the British Government except the following:



Dr. V. Bush

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February 24, 1943

Pertaining to the Army: Bomb ballastic tables.

Pertaining to the Navy: The bombsight and the antenna mine with two-way firing device.

"Should the British Government request drawings, specifications, performance data, and any other detailed information relating to items available for release, such information will be furnished by the Department concerned."

This letter also called attention to a provision whereby the British Government should obtain rights to manufacture devices which were the invention of American inventors.

Subsequent to receipt of information of the position of the War and Navy Departments on this interchange, a statement of the proposed interchange plan to be followed by NDRC with Great Britain and Canada was formulated and submitted to Professors Fowler and Cockroft, representing the British Scientific Mission, and to Dean C. J. Mackenzie, Acting President of the National Research Council of Canada, and this memorandum of general procedure was accepted by them (Appendix 5).

Inasmuch as the joint letter from the Secretaries of War and Navy (Appendix 4) related specifically to Britain and did not include Canada, you subsequently wrote to the Secretary of War, under date of October 30, 1940, (Appendix 6) acknowledging the joint letter of October 24th and inquiring as to the inclusion of Canada in this interchange arrangement. Under date of November 20th, 1940, a joint letter, signed by the Acting Secretaries of War and Navy, confirmed your assumption that the arrangements described in the joint letter of October 24th were intended to be applicable to Canada as well as Great Britain (Appendix 7).

At the time it was proposed that Dr. Conant go to England as a member of a scientific mission to work out interchange procedures in detail with the British, Dr. Conant undertook this mission at the request of the President, and under date of February 4, 1941, the President wrote to you as follows:

Dr. V. Bush

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February 24, 1943

THE WHITE HOUSE  
Washington, D. C.

February 4, 1941

Dear Dr. Bush:

I am delighted at the prospect of Dr. Conant going to England as a member of a Mission to interchange technical information with the British. He will do a grand job.

Very sincerely yours,

/s/

FRANKLIN D. ROOSEVELT

Dr. Vannevar Bush, Chairman  
National Defense Research Committee  
of the Council of National Defense  
1530 P Street  
Washington, D. C.

There is one other aspect of this matter which might be included. On September 28, 1940, after initial discussions with Sir Henry Tizard's Mission, you wrote to Admiral Anderson (Appendix 8) with reference to the interchange of scientific information with the British in the field of the work of the Uranium Committee. Verbal telephone confirmation of the appropriateness of inaugurating such an interchange was followed by Admiral Anderson's letter of October 1, 1940, (Appendix 9) to which was appended a copy of the letter from the Secretary of Navy to the Chiefs of various Bureaus and other officers, setting forth the position of the Navy Department with reference to exchange of technical information with the British Government.

Carroll L. Wilson



## OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT

1530 P, Street, N. W.

## INTER-OFFICE MEMORANDUM

C  
O  
P  
Y

February 6, 1943

TO: Mr. Carroll L. Wilson  
FROM: John T. Connor  
SUBJECT: Foreign Liaison Activities of NDRC and OSRD

I think that it will be helpful to have in our files the following outline of the Liaison Office activities which we have been discussing recently.

I. PERIOD PRIOR TO LEND-LEASE ACT

Facts. (1) Pursuant to the authority given by the President (Lord Lothian Aide Memoir dated July , 1940, and President Roosevelt's letter to Dr. Bush dated February 4, 1941, concerning Dr. Conant's mission to England) and pursuant to the policy fixed by the Army and Navy (joint letter to Dr. Bush from Secretaries Stimson and Knox dated October 24, 1940), NDRC commenced a broad interchange of scientific and technical defense information with the British Government. A summary of the details of the broad interchange plan was revealed to the Army and the Navy (letters dated October 30, 1940, from Dr. Bush to Secretaries Knox and Stimson), and it was specifically pointed out that the procedure planned would involve the interchange of defense information through the media of memoranda, reports and conferences and by personal visits to research laboratories. Also, it was stated that it was assumed that the proposed interchange procedure applied to the Canadian Government.

(2) This extension to the Canadian Government was approved as a matter of policy by the Army and Navy (joint letter dated November 20, 1942, addressed to Dr. Bush by acting Secretaries Patterson and Forrestal).

(3) As a result of these negotiations, a Liaison Officer for NDRC was appointed by Dr. Bush to administer the broad interchange of defense information.

(4) Thereafter, under authority given by the President (President Roosevelt's letter to Dr. Bush dated

February 4, 1941, concerning the Conant Mission) and with the Army and Navy's approval as to policy (letters construing instructions to military and naval attaches in London by Secretaries Knox and Stimson dated February 7, 1941, and February 11, 1941, respectively), the OSRD London Liaison Office was established in March, 1941, to facilitate the broad interchange of defense information.

Conclusions. (1) NDRC could properly interchange scientific and technical defense information with the British and Canadian Governments through the media of memoranda, reports, conferences, personal visits and, impliedly, by the transmission of models which are utilized primarily as a vehicle for conveying information.

(2) NDRC could not dispose of defense articles to foreign governments.

## II. PERIOD FROM LEND-LEASE ACT TO ESTABLISHMENT OF OSRD.

Facts. (1) The Lend-Lease Act was enacted by Congress and approved by the President on March 11, 1941. Under said Act Congress gave the President power to authorize the disposition of defense articles and the communication of defense information pertaining thereto to the Governments of countries whose defense the President deems vital to the defense of the United States.

(2) The Australian Government was accredited by the State Department as a participant in the interchange of defense information (Welles' letter to Casey dated June 11, 1941)\*.

Conclusions. (1) NDRC's authority for the transmission of defense information not pertaining to defense articles remained unchanged.

(2) NDRC still was not authorized to dispose of defense articles.

## III. PERIOD FROM ESTABLISHMENT OF OSRD TO ESTABLISHMENT OF OLLA.

Facts. By Executive Order No. 8807 the President established the Office of Scientific Research and Development on June 28, 1941.

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\*Later the Government of the Union of South Africa was also accredited (as indicated by letter dated September 22, 1941, from South African Minister to Dr. Bush).

Paragraph 2 (g) of the Order authorized OSRD to:

"Initiate and support such scientific and medical research as may be requested by the government of any country whose defense the President deems vital to the defense of the United States under the terms of the Act of March 11, 1941, entitled 'An Act to Promote the Defense of the United States'; and serve as the central liaison office for the conduct of such scientific and medical research for such countries."

This was interpreted (Administrative Order No. 1, dated August 20, 1941, approved by the President) to authorize the establishment of the OSRD Liaison Office under the supervision of a Senior Liaison Officer whose duties "shall be the conduct of scientific liaison with" "Lend-Lease countries.\*"

Conclusions. (1) OSRD could properly continue the same broad procedure for the interchange of scientific and medical defense information started by NDRC (memorandum dated November 20, 1942, to Dr. Bush from Oscar Cox, General Counsel for C. E. M.).

(2) OSRD could not dispose of defense articles.

#### IV. PERIOD FROM ESTABLISHMENT OF OLLA TO SECOND SUPPLEMENTAL NATIONAL DEFENSE APPROPRIATION ACT, 1943.

Facts. (1) Under an Executive Order approved October 28, 1941, the President authorized and directed the Lend-Lease Administrator to exercise any power or authority heretofore or hereafter conferred on the President by the Lend-Lease Act, the Defense Aid Supplemental Appropriation Act, 1941, and any acts amendatory or supplemental thereto. Acting pursuant to the provision of the Lend-Lease Act (Sec. 3 (b)) governing reciprocal aid, the Lend-Lease Administrator delegated to OSRD the duty of keeping "accurate records of the defense information which is received under the Lend-Lease Act", with the requirement that copies of all lists of reports received by OSRD be transmitted to the Lend-Lease Administrator (letter dated November 18, 1941, from Major General James H. Burns to Dr. Bush; letter dated December 2, 1941, from Dr. Bush to Major General Burns; letter dated December 17, 1941, from E. R. Stettinius, Jr. to Dr. Bush; letter dated December 19, 1941, from Dr. Bush to Mr. Stettinius; letter dated December

---

\*This authorization was continued under Administrative Order No. 2, dated September 24, 1942.

30, 1941, from Mr. Stettinius to Dr. Bush). Although the Lend-Lease Administrator was put on notice as to procedure being followed by OSRD in transmitting scientific and medical defense information to the British, Canadian, Australian and South African Governments (letter dated December 2, 1941, from Dr. Bush to General Burns), no question was raised concerning its propriety or concerning the method of keeping records.

(2) OSRD was authorized (letter dated June 22, 1942, from Dr. Bush to Mr. McCabe; Mr. McCabe's reply to Dr. Bush dated July 1, 1942; and Mr. Young's letter to Dr. Bush dated September 10, 1942) to dispose of technical and scientific defense articles, and services in connection therewith, using Lend-Lease funds under the procedure set up in accordance with the provisions of the Lend-Lease Act.

Conclusions. (1) OSRD could continue its broad procedure for the interchange of scientific and medical defense information. (See Cox memorandum to Bush dated November 20, 1942). Any possible doubts as to jurisdictional conflicts between OSRD and OLLA in the field of information received by the United States as reciprocal aid were resolved by the delegation of the authority from OLLA to OSRD.

(2) OSRD could dispose of technical and scientific defense articles, and services in connection therewith, under the Lend-Lease procedure.

#### V. PERIOD FROM SECOND SUPPLEMENTAL NATIONAL DEFENSE

##### APPROPRIATION ACT, 1943 TO DATE.

Facts. (1) Title II of said Act (Pub. Law 763, 77th Cong., approved October 26, 1942) provides that funds appropriated to the President for Lend-Lease purposes shall be available retroactively as well as prospectively for the procurement, disposition or furnishing of any defense information or defense services under the Lend-Lease Act, whether or not such information or services are necessary to or connected with the procurement or disposition of any defense article. Also, said Title II provides that the authority to dispose of defense articles granted in designated appropriation acts (not including the First Supplemental National Defense Appropriation Act, 1943, from which the OSRD appropriation is derived) "shall be deemed to include the authority to procure, dispose of, or furnish any defense information or defense service under said Act of March 11, 1941, whether or not such information or service is necessary to or connected with the procurement or disposition of any defense article".



Conclusions. The provisions in Title II of the Second Supplemental Defense Appropriation Act, 1943, clear up any possible doubts concerning the propriety of using Lend-Lease and defense aid appropriations for furnishing under the Lend-Lease Act information and services not connected with defense articles. However, it seems that OSRD's authority to interchange scientific and medical defense information is unaffected. Any possible doubts on this point should be settled by interchange of letters between Dr. Bush and Mr. Stettinius wherein Mr. Stettinius can agree to the continuance of OSRD's interchange procedure.

WAR DEPARTMENT  
OFFICE OF THE ASSISTANT SECRETARY  
WASHINGTON, D. C.

September 12, 1940.

Dr. Vannevar Bush,  
Chairman, National Defense  
Research Committee,  
1530 P Street, N. W.,  
Washington, D. C.

Dear Dr. Bush:

It is the hope of the War Department  
that you and your associates will take the opportunity of  
getting in touch with Sir Henry Tizard and the members of  
his staff and will discuss freely with them all problems  
that have to do with national defense. It is thought that  
a free interchange of views will be most beneficial.

Sincerely yours,

/S/ Robert P. Patterson

Robert P. Patterson,  
The Assistant Secretary of War.



COPY

~~CONFIDENTIAL~~

September 30, 1940

AS SENT TO:

General George C. Marshall  
Chief of Staff  
War Department  
Washington, D. C.

Admiral Harold R. Stark  
Chief of Naval Operations  
Navy Department  
Washington, D. C.

My dear \_\_\_\_\_:

The National Defense Research Committee has conferred with Sir Henry Tizard's mission on the scientific aspects of defense research, and these interchanges have been valuable in the interests of national defense.

In these conversations the Committee has been guided by the expressed wishes of the War and Navy Departments. These have differed widely; the War Department expressing no restrictions, and the Navy Department indicating a list of subject on which, in accordance with their wishes, no conversations have been held. This list includes subjects of interest to both services.

Sir Henry Tizard recently presented to the Committee a plan for continuing interchange for the period of the emergency. The Committee is in accord with the interchange plans proposed; but feels that the scope should be more clearly defined than at present.

The Committee wishes, of course, to conduct its interchange strictly in accordance with the understanding under which the British Scientific Mission made its visit. It finds itself in a quandary because of the apparently different interpretations placed by the two Services upon this understanding. It considers that it is not sufficient merely to follow in the future the more restricted interpretation, as in so doing it may fail to provide desirable interchange within the correct scope of the understanding. It feels strongly that direct conversations between scientists is essential for full benefit on important developments not yet arrived at application. It

considers that while scientific interchange has so far been much limited, it will be possible to provide for adequate contact with later visitors and by sending carefully selected scientists to confer with groups which cannot be spared for visits here.

The Committee accordingly directed me to request the War and Navy Departments to more clearly define the scope of the understanding for the guidance of the Committee. This appears to be a matter of such importance, and nature as to warrant the attention of the Secretaries of War and Navy. I am entirely at your service in this connection.

Very truly yours,

V. Bush  
Chairman

COPY

WAR DEPARTMENT  
NAVY DEPARTMENT  
Washington

Navy No.  
(SC)A8-3/EF13

October 24, 1940

██████████  
Dr. V. Bush, Chairman,  
National Defense Research Committee,  
1530 P Street, N.W.,  
Washington, D.C.

My dear Dr. Bush:

In accordance with your request, dated September 30, 1940, to General Marshall, Chief of Staff of the Army, regarding exchange of technical information with the British Government, the matter has been considered by the War and Navy Departments which have agreed upon the following joint policy.

It is agreed that all devices, instruments, or systems in use, developed for use or under development by the War and Navy Departments will be offered for release to the representatives of the British Government except the following:

Pertaining to the Army: Bomb ballastic tables.

Pertaining to the Navy: The bombsight and the antenna mine with two-way firing device.

Should the British Government request drawings, specifications, performance data and any other detailed information relating to items available for release such information will be furnished by the Department concerned.

In all cases of exchange, it must be understood that the information to be furnished relates to the existence and the operation of specific given devices; and that should the British Government desire to manufacture or have manufactured by other than the patentees or the original manufacturers thereof any such given devices, or to incorporate features of such given devices in other instruments or systems they may devise, the British Government must make such arrangements as may be necessary with the patentees or the original manufacturers of the given devices for the reproduction or use of any features of such given devices,

for the reproduction or use of any features of such given devices, guaranteeing to said manufacturers or patentees a right to establish a claim against the British Government for entire and reasonable compensation for such reproduction and/or use of the given devices or any of their features where such arrangements have not been satisfactorily concluded prior to such reproduction and/or use; and further, the British Government must agree to protect the rights of such manufacturers or United States patentees against the filing of applications for Letters Patent in Great Britain, its Dominions or Colonies, on any such given devices or any features thereof.

Sincerely yours,

/S/ Frank Knox

Secretary of the Navy

/S/ Henry L. Stimson

Secretary of War.



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APPENDIX 5

AEC &amp; Division FORL

2-12-70

MEMORANDUM on Interchange of Scientific Information between the National Defense Research Committee and Great Britain and Canada.

Summary of Proposed Interchange Plan

1. Professor Fowler is stationed at Ottawa. He and his staff will be fully informed of British and Canadian developments. He will act as the channel of communication between NDRC and corresponding bodies and research establishments in England and Canada. In order to facilitate such interchange all reports and memoranda containing technical subject matter should be transmitted by NDRC through the chairman who will forward such material to Professor Fowler. Similarly, reports and memoranda concerning British or Canadian technical developments should be transmitted through Professor Fowler's office to the Chairman of NDRC who will see that such material reaches the appropriate Division or Section of NDRC.

2. Subject matter for interchange is to be sub-divided into the more important fields of science and engineering, both to facilitate liaison and to relieve individuals from the responsibility of handling information outside their principal fields of competence. Information for transmittal to Professor Fowler by the NDRC must necessarily be limited to subject matter of which the NDRC has cognizance.

3. Information is to be exchanged through the media of memoranda, reports and conferences and through visits both by Prof. Fowler and/or his representatives to laboratories in U. S. where NDRC is sponsoring work and by NDRC representatives to research establishments in England and Canada. Designation of a representative by either party will be accepted as certification that he is a competent man in his field and a suitable person to receive information.

4. NDRC will arrange for visits by Prof. Fowler and/or his representatives to laboratories where NDRC work is under way and for full disclosure of such work. Prof. Fowler will do likewise for NDRC representatives in England and Canada.

5. Consistent with the scope and functions of NDRC which are to support and correlate scientific research on mechanisms and devices of warfare except for research on problems of flight and medicine, such interchange will supplement and not supplant other information interchange channels such as military and naval attaches.

10-25-40

DECLASSIFIED

APPENDIX 6

AEC to Director FORC (PART I)

2-12-70

COPY

October 30, 1940

My dear Mr. Secretary:

I wish to acknowledge the receipt of the joint letter signed by yourself and the Secretary of the War, dated October 24, 1940, defining the policy which has been adopted by the Navy and Army in regard to interchange of scientific and technical information with Great Britain. This communication was presented to the National Defense Research Committee at its meeting on October 25th and its substance recorded in the minutes of that meeting. This Committee, in its interchange of information with Great Britain, will be guided by the same restrictions as have been imposed by the Navy and Army. We believe that the close relationships which exist between this Committee and the Armed Services will facilitate the close coordination of policy and procedure of this Committee with those of the Navy and Army with regard to interchange matters. As an initial procedure in handling interchange of such information this Committee, at its recent meeting, adopted a plan which is described in the enclosed memorandum. See appendix 5

Unless we hear from you to the contrary we are assuming that the interchange of information with Great Britain implies a similar disclosure to Canada since the British and Canadians are working in intimate collaboration and freely disclosing information to each other.

Based on our experience to date in regard to the valuable information which has already been obtained by our Committee from the members of the



-2-

British Technical Mission, we are hopeful that this interchange plan will prove of continuing value to this Committee and therefore to the Navy and Army.

Very sincerely yours,

Vannevar Bush  
Chairman

The Honorable Frank Knox  
Secretary of Navy  
Navy Department  
Washington, D. C.

CC: Admiral H. R. Stark  
Chief of Naval Operations  
Navy Department  
Washington, D. C.

CLW:nf

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AEC to Director FDRL  
2-12-70

(PART II)

COPY

October 30, 1940

My dear Mr. Secretary:

I wish to acknowledge the receipt of the joint letter signed by yourself and the Secretary of the Navy, dated October 24, 1940, defining the policy which has been adopted by the Army and Navy in regard to interchange of scientific and technical information with Great Britain. This communication was presented to the National Defense Research Committee at its meeting on October 25th and its substance recorded in the minutes of that meeting. This Committee, in its interchange of information with Great Britain, will be guided by the same restrictions as have been imposed by the Army and Navy. We believe that the close relationships which exist between this Committee and the Armed Services will facilitate the close coordination of policy and procedure of this Committee with those of the Army and Navy with regard to interchange matters. As an initial procedure in handling interchange of such information this Committee, at its recent meeting, adopted a plan which is described in the enclosed memorandum. [See Appendix 5]

Unless we hear from you to the contrary we are assuming that the interchange of information with Great Britain implies a similar disclosure to Canada since the British and Canadians are working in intimate collaboration and freely disclosing information to each other.

Based on our experience to date in regard to the valuable information which has already been obtained by our Committee from the members of the British Technical Mission, we are hopeful that this interchange plan will prove of continuing value to this Committee and therefore to the Army and Navy.

Very sincerely yours,

Vannevar Bush  
ChairmanThe Honorable H. L. Stimson  
Secretary of War  
War Department  
Washington, D. C.cc General G. C. Marshall  
Chief of Staff  
War Department  
Washington, D. C.

WAR DEPARTMENT  
NAVY DEPARTMENT  
WASHINGTON

APPENDIX 7

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AEC to Director FOR

2-12-70

WD 400.3295 (10-30-40)M-WPD

November 20, 1940

Dr. Vannevar Bush, Chairman,  
National Defense Research Committee,  
1530 P Street, N. W.,  
Washington, D. C.

My dear Dr. Bush:

Replying to your letter of October 30, 1940, you are advised that the joint policy of the War and Navy Departments on the interchange of technical information with British representatives, as stated in our joint letter of October 24, 1940, was intended to be applicable to Canadian representatives also. Therefore, your assumption that the Canadians are to be included in the collaborations between the American and British representatives, has the approval of the two Departments.

Sincerely,

/S/ Robert P. Patterson

Acting Secretary of War.

/S/ James Forrestal

Acting Secretary of the Navy.

Franklin D. Roosevelt Library

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AEC to Director FDR/C COPY  
2-12-70

September 28, 1940.

Rear Admiral W. S. Anderson,  
Office of Chief of Naval Operations,  
Navy Department,  
Washington, D.C.

Dear Admiral Anderson:

I have received your letter of September twenty-fourth, and in accordance with that letter there is one point in regard to the interchange with Sir Henry Tizard's mission on which I need further advice.

This mission would like to confer with the Uranium Committee of the National Defense Research Committee early this next week. You will remember that the Uranium Committee was appointed by the President before the NDRC was formed and later transferred to its jurisdiction. I consider that the interchange would be helpful in the interests of national defense. Will you kindly let me know whether there is any reason why such interchange should not be arranged?

The National Defense Research Committee at its meeting yesterday considered future long-range relationships along these general lines, and I was instructed to take the subject up definitely so that future relations may be entirely clarified. This I will do early next week.

Very truly yours,

V. Bush,  
Chairman.

COPY

NAVY DEPARTMENT  
OFFICE OF THE CHIEF OF NAVAL OPERATIONS  
WASHINGTON

October 1, 1940

Dear Dr. Bush:

In confirmation of my telephone conversation, I am enclosing herewith for your information a copy of the Secretary of the Navy's letter, Serial No. 0225716, dated 28 September, on the subject of the exchange of technical information with the British Exchange Committee.

Yours very truly,

/S/ W. S. Anderson

W. S. Anderson  
Rear Admiral, U.S. Navy  
Director of Naval Intelligence

Dr. Vannevar Bush, Chairman  
Nat'l Defense Research Committee  
Carnegie Institution,  
16th and P Streets, N.W.  
Washington, D. C.

16-F  
A8-3/WF13  
(SC)A8-3/WF13  
Serial No. 0225716  
[REDACTED]

FRANKLIN D. ROOSEVELT  
DECLASSIFIED

AEC to Director F. R. L.  
2-2-70

COPY

28 September 1940

From: The Secretary of the Navy  
To: Chief of Bureau of Ships  
Chief of Bureau of Ordnance  
Chief of Bureau of Aeronautics  
Director of War Plans Division  
Director of Naval Communications  
Director of Fleet Training Division  
Technical Aide to Secretary of the Navy

SUBJECT: Exchange of Technical Information with the  
British Government

References: (a) DNI Memorandum, Serial No. 0124216 for  
CNO, dated 23 July 1940 (copies to all  
addressees)  
(b) DNI Memorandum, Serial No. 0128016 for  
CNO, dated 25 July 1940 (copies to all  
addressees)  
(c) CNO letter, Serial No. 0187416, to all  
addressees, dated 4 September 1940.  
(d) CNO letter, Serial No. 0210216, to all  
addressees, dated 20 September 1940.  
(e) War Department Memorandum, G-2, SM/TDF,  
dated 19 September 1940.

1. The restrictions imposed on the exchange of certain items in classes of technical information with the British Government, as set forth in references (a), (b), (c) and (d) are hereby cancelled.

2. Because of the advantages that will accrue to the country in the matter of procurement and combat tests, all devices, instruments, or systems in use, developed for use or under development by the Navy Department will be offered for release to the representatives of the British Government except the following:

- (a) the bombsight;
- (b) the antenna mine with two-way firing device.

3. Should the British Government, as a result of these offers, request drawings, specifications, performance



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AEC to Director FDRL

2-12-70

Op-16-F

(SC)A8-3/TF13

A8-3/TF13

Serial No. 0225716  
[REDACTED]

data and any other detailed information on this matter, they shall be furnished this information.

4. In reference (e), the Navy Department was informed that the War Department does not, of its own accord, desire to exclude from discussion with representatives of the British Technical Mission any items now under development.

5. In all cases of exchange, it must be understood that the information to be furnished relates to the existence and the operation of specific given devices; and that should the British Government desire to manufacture or have manufactured by other than the patentees or the original manufacturers thereof any such given devices, or to incorporate features of such given devices in other instruments or systems they may devise, the British Government must make such arrangements as may be necessary with the patentees or the original manufacturers of the given devices for the reproduction or use of any features of such given devices, guarant eeing to said manufacturers or patentees a right to establish a claim against the British Government for entire and reasonable compensation for such reproduction and/or use of the given devices or any of their features where such arrangements have not been satisfactorily concluded prior to such reproduction and/or use; and further, the British Government must agree to protect the rights of such manufacturers or United States patentees against the filing of applications for Letters Patent in Great Britain, its Dominions or Colonies, on any such given devices or any features thereof.

6. The Head of the British Technical Mission has been informed of the contents of paragraph 5 above, as a general proviso governing all applicable cases coming under the exchange of information.

Frank Knox  
Secretary of the Navy

CC: N.A. London  
War Department



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AEC to Director FDRL  
2-12-70

~~TOP SECRET~~

10, Downing Street,  
Whitehall.

### TUBE ALLOYS

Aide-memoire of conversation between the President and the Prime Minister at Hyde Park, September 18, 1944.

1. The suggestion that the world should be informed regarding Tube Alloys, with a view to an international agreement regarding its control and use, is not accepted. The matter should continue to be regarded as of the utmost secrecy; but when a "bomb" is finally available, it might perhaps, after mature consideration, be used against the Japanese, who should be warned that this bombardment will be repeated until they surrender.
2. Full collaboration between the United States and the British Government in developing Tube Alloys for military and commercial purposes should continue after the defeat of Japan unless and until terminated by joint agreement.
3. Enquiries should be made regarding the activities of Professor Bohr and steps taken to ensure that he is responsible for no leakage of information, particularly to the Russians.

*F.R.* *W*  
18.9

File # 1645/27  
FB.

~~SECRET~~  
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AEC to Director FDRL

2-12-70

CCND

Feb. 27, 1943.  
1744, Z

From: London  
To: THE PRESIDENT OF THE UNITED STATES

No. # February 27, 1943.

Prime Minister to Mr. Harry Hopkins. Personal immediate  
and ~~SECRET~~. Yours of the 24th.

In my immediately following telegram I send you brief memorandum summarizing history of US UK relations on project known as S-1 or tube alloys. If any of documents quoted therein are not available to you, please let me know at once so that I can send you copies by air.

There is no question of breach of agreement. Basis on which all interchange of information has taken place up to this time has been one of complete mutual confidence and of conviction that the most certain and most rapid realization of the project can be attained only through complete cooperation. Suggestion for formal agreement made from our side in August last was concerned more with joint control and post war arrangements than with wartime collaboration in actual work which, after the President's approach to me in October 1941, had always been taken for granted.

We believe that no one will dispute that the American and British scientists and technicians working together as a joint team must achieve success in this difficult and novel project more quickly and efficiently than either group working separately.

When the President and I talked of this matter at Hyde Park in June 1942, my whole understanding was that everything was on the basis of fully sharing the results as equal partners. I have no record, but I shall be very much surprised if the President's recollection does not square with this.

I base my request to you to review the position and restore the original policy of joint work on my conviction that this is necessary if the joint resources of the two countries are to be used most efficiently. But I think that memorandum in my immediately following telegram will show you that, if I had to justify my case on grounds of fair play, I should have little difficulty in doing so.

I must ask you to let me have very soon a firm decision on US policy in this matter, as urgent decisions about our programme here and in Canada depend on the extent to which full collaboration between us is restored.

~~SECRET~~  
Prime

~~SECRET~~  
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AEC to Director FDRL

2-12-70

Filed 1645Z/27  
FB

CCMD  
Feb. 27, 1943.  
1807 Z

From: London  
To: THE PRESIDENT OF THE UNITED STATES.

No. # February 27, 1943.

Prime Minister to Mr. Harry Hopkins. Personal immediate  
and ~~secret~~ My immediately preceding telegram.

Following is memorandum summarizing history of US UK  
relations on project known as S-1 or tube alloys. (Memorandum  
begins.)

After the discovery in Germany in December 1938 of the  
fission of U 235, research proceeded in France, USA and Britain on  
the possibility of using this as a source of energy both for power  
generation and as a military explosive.

From the middle of 1940 the work in USA was organized under  
the S-1 Committee of N D R C and in UK under the M A U D Committee of  
M A P and information was freely exchanged both in written documents  
and verbally.

Painbridge and Lauritsen of NDRC attended MAUD Committee  
meetings in April and July 1941 at which complete reviews of the  
British work were given.

In a letter dated October 11, 1941 President Roosevelt  
suggested to Prime Minister that they should soon correspond or  
converse "In order that any extended efforts may be coordinated or  
even jointly conducted."

In December 1941 the Prime Minister replied "I need not  
assure you of our readiness to collaborate with the US administration  
in this matter".

Meanwhile British work had been reorganized and greatly  
expanded under a "Director of Tube Alloys" directly responsible to  
the Lord President. Similar reorganization took place in USA.

Professors Pegram and Urey visited Britain in November  
1941. They were allowed free access to all our laboratories, so  
that they could study our work and new organization in detail.

Full information was also exchanged in writing (letters  
from Dr. Bush to Sir J. Anderson of December 23, from Mr. Brook to

~~SECRET~~

~~CONFIDENTIAL~~  
REC & Director FDR  
2-12-70

From: London  
To: THE PRESIDENT OF THE UNITED STATES  
No. // February 27, 1943.

Page 2.

Mr. Howde of January 20, from Sir J. Anderson to Dr. Bush of March 23 and from Dr. Bush to Sir J. Anderson of April 20.)

All these communications assumed on both sides complete collaboration at all stages of the project.

This policy was fully confirmed when Mr. Akers, British Director of Tube Alloys, accompanied by Professors Simon, Halban and Pierls, visited America between February and June 1942. They gave full and detailed information about all our progress and plans and were able to discuss all aspects of the project with US scientists with complete frankness on both sides.

The President and the Prime Minister discussed the question generally at Hyde Park in June 1942, and it is the Prime Ministers clear recollection that the whole basis of the conversation was that there was to be complete cooperation and sharing of results.

Between June and October 1942 correspondence took place between Dr. Bush and the Lord President with the object of finding the most efficient way of using the combined industrial and scientific resources of the two countries to realize the Tube Alloy project in the best interests of the United Nations.

The Lord President suggested that this would best be achieved by arranging for the joint effort to be used in building a plant in North America.

The proposal to build a plant in North America rather than in Britain was not due to any technical inability on the part of the British but to the conviction that this was best on strategic grounds and would involve the minimum interference with the joint war effort.

Throughout this correspondence there is no hint that Dr. Bush contemplated any restriction in interchange of technical information. Wording shows that object of both parties at that time was still to find best means of forwarding a joint cooperative effort.

Contemporaneously with this correspondence there was also an exchange of letters between the Lord President and Dr. Bush in which the former emphasized his conviction that the closest cooperation and exchange of technical information was essential and should be safeguarded by an agreement between the two governments for joint execution of the project and joint wartime and post war control.

At Dr. Bush's invitation Mr. Akers visited USA from November 1942 to end of January 1943 to inform him of our latest results and to

~~CONFIDENTIAL~~



~~SECRET~~

From: London  
To: THE PRESIDENT OF THE UNITED STATES .  
No. // February 27, 1943.

Page 3.

discuss the interlocking of the programmes of the two countries.

After being informed that the US Army was now responsible for all work beyond laboratory research and that it was proposed to tighten up exchange of information solely in the interests of secrecy. Mr. Akers was eventually, on January 7, 1943, given by Dr. Conant a memorandum on the interchange with the British and Canadians on S-1.

This memorandum is stated to derive from the basic principle "That interchange on design and construction of new weapons and equipment is to be carried out only to the extent that the recipient of the information is in a position to take advantage of this information in this war."

The memorandum sets out the logical result of applying this principle to all phases of the S-1 project, in the light of the respective American and British programmes then envisaged. It limits drastically interchange of technical information and entirely destroys the original conception of "A coordinated or even jointly conducted effort between the two countries."

Prime

Franklin D. Roosevelt Library

DECLASSIFIED

AEC to Director FDRL

2-12-70

~~SECRET~~



family

THE WHITE HOUSE  
WASHINGTON

July 27, 1943

Dearest Franklin:

Mr. Irving S. Lowen, the man about whom I telephoned will be in Washington tomorrow.

Mr. Lowen says that Dr. Bush and Dr. Conant would be of absolutely no use because they have been so close to the project that they have perhaps lost the sense of urgency which these younger men have.

There is they believe, a chance that a very brilliant man who is working on this in Germany may have been able to develop it to the point of usefulness. The Germans are desperate and would use this if they have it ready. It is imperative they feel that we proceed quickly to perfecting it and these young scientists believe that they are already two years behind all that they might have accomplished if they had been allowed to progress.

They want an investigation by an impartial outsider who can see the possibilities of what might happen, but who is not a scientist, ~~perhaps~~ a man of judicial temperament who will weigh the possibilities.

Mr. Lowen thinks you might want to speak to some of the other men

Professor H.C. Uray, Columbia  
Professor Wigner  
Professor Szilard  
Professor Fermi  
Professor Oppenheimer  
Dr. Gale Young  
Professor A. H. Compton,  
all of various parts of the project.

(The file on Mr. Lowen is

I was not being shortly this a. m. I was told  
by Gen. Gage that Gage knew of heat was Haverhill  
& Bricham & he would be to the place heads of  
the train - I can pick up someone in each place if I need  
them - I don't want to take Tommy, he stands  
heat badly & I would be more worried & held back  
if he got ill than anything she could do  
would compensate for - I am quite willing  
not to go -

Much love

WSP

I hope you see some - He expresses  
me with his true anxiety -

~~TOP SECRET~~

23 August 1944

From: U.S. Military Attache, London, England

To: President of the United States

Mr: No Number

Filed 231039Z

Prime Minister to Mr. Harry Hopkins, personal, private,  
and ~~TOP SECRET~~.

For Stage 2 I should require to have with me Chancellor  
of Exchequer Anderson, Oliver Lyttelton and Lord Cherwell.  
These complicated discussions could take place side by side  
with military topics. It might also be well for Anderson and  
Cherwell to contact your people on T A.

For President's most secret personal information Alexander  
is going to make a considerable push in the near future, with  
what he has got left. You know, Harry, that I have here the Army  
of British Empire, British Canadian, Australian, South African,  
and Indian. The airborne army is so representative of whole  
Empire. They are in grand fettle in spite of unsettlements  
caused to all ranks by pulling out of key elements, which has  
gone on for three months, but I hope their action will remind  
you they cannot possibly be left on side line during later phase

REGRADED UNCLASSIFIED by British  
Govt., State Dept. tel., 3-29-72  
By R. H. Parks Date JAN 24 1973

Recd 23/13 10 11

Int. office

~~TOP SECRET~~

~~TOP SECRET~~

-2-

of war. I could never consent to this.

I shall now probably come by Boeing, which gives me four or five days more in London and France, to which I must pay a visit.

Foresee enemy present policy of holding on to all ports to utmost while withdrawing under strong rearguard to Swiss frontier - Dijon - Paris line or farther make it most necessary we shall obtain port facilities and not be jammed up against au tumn and winter gales, as is evidently the desire of Schickelgruber.

Looking forward so much to seeing you and our great friend in near future.

End

REGRADED UNCLASSIFIED by British  
Govt., Stato Dept. tel., 3-29-72  
By R. H. Parks Date JAN 24 1973

~~TOP SECRET~~

Supreme Court of the United States  
Washington, D. C.

CHAMBERS OF  
JUSTICE FELIX FRANKFURTER

Frankfurter folder 3-4  
1511-30 Sheet  
September 14  
PSF

Dear Frank:

Here is a letter from my  
Soviet friend.

From many long talks with him  
I gather that there are three solid  
reasons for believing that knowledge  
of the pursuit of our project can  
hardly be kept from Russia:

- (1) they have very eminent scientists,  
particularly Peter Kapitza, en-  
tirely familiar through past  
experience with these problems;
- (2) some leakage, even if not of  
results and methods, must un-  
avoidably have trickled to Russia;
- (3) Germans have been similarly  
busy, and knowledge of their  
endeavors will soon be open  
to the Russians. Therefore, to

Supreme Court of the United States  
Washington, D. C.

CHAMBERS OF  
JUSTICE FELIX FRANKFURTER

open the subject with Russia, without  
of course making essential dis-  
closures before effective safe-  
guards and sanctions have been  
secured and assured, would not  
be giving them anything they  
do not already - or soon will -  
substantially have.

In a word, the argument is  
that appropriate candor would  
risk very little. Withholding, on  
the other hand, might have grave con-  
sequences. There may be answers  
to these considerations. I venture  
to believe, having thought a good  
deal about it that in any event  
~~these~~ these questions are very serious.  
My very best wishes for success-  
ful days in the task immediately ahead.  
Affectionately yours



OFFICE FOR EMERGENCY MANAGEMENT  
OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT  
1530 P STREET NW.  
WASHINGTON 25, D. C.

VANNEVAR BUSH  
Director

August 28, 1944.

The President,  
The White House,  
Washington, D.C.

Dear Mr. President:

I transmit herewith a further report on the operations of the Office of Scientific Research and Development. It touches on some highlights of accomplishment, and recites changes in organization.

There is a section on plans for termination, for OSRD is a war agency, and should plan to go out of existence in an orderly manner at the proper time. I hope you will find opportunity to look at this section, for I would like to announce the plans to our personnel soon, and I trust you will caution me if you see anything wrong with the plans. I have taken them up with the Secretaries of War and Navy, and feel sure I will have their assent.

I have included a section on military organization for research, for my experience of the past four years has left strong convictions as to the manner in which it should be conducted post-war. Undoubtedly I will be called on to say what I think on this subject at some time, and I believe that my thinking on the matter is not far from your own. Still I would appreciate it enormously if you should find time to consider my statements on this subject and to advise me where you think I am on the wrong track. The sections of the report which deal with termination and post-war organization bear tabs for ready reference.

It is pleasant indeed to look forward to the time when it will be possible to drop off my present burden, although it has certainly been a privilege and a pleasure to serve under your command. You may be assured that, while we plan for termination, we will not leave anything undone which may help in bringing the whole war to an early and successful conclusion.

Respectfully yours,



V. Bush,  
Director.



3526

27

THE WHITE HOUSE

WASHINGTON

September 29, 1944

MEMORANDUM FOR

DR. V. BUSH

Many thanks for your letter of August twenty-eighth, together with the accompanying report on the operations of The Office of Scientific Research and Development.

I am delighted to have this and I feel that you are absolutely on the right track.

I am referring the recommendation for termination when peace comes to the Secretary of War and the Secretary of the Navy personally, and I will let you know as soon as I hear.

F. D. R.

THE WHITE HOUSE  
WASHINGTON

September 29, 1944

MEMORANDUM FOR

THE SECRETARY OF WAR  
and  
THE SECRETARY OF THE NAVY (3527 hms)  
(rich copy of Ltr 8/28/44)

Please read this very interesting report of Dr. Bush in regard to The Office of Scientific Research and Development and its termination, and let me have your judgment, especially in regard to pages 57 to 61.

F. D. R.

Original of report and copy of Dr. Bush's let to the P 8/28/44 sent to SecWar 9/29/44 - Sealed in envelope and given to Major Cullie to deliver to the Secretary's office personally.

*file*  
~~SECRET~~  
WAR DEPARTMENT  
WASHINGTON

*Dr. Bush folder* 3-44  
0

October 18, 1944.

Dear Mr. President:

In accordance with your request, I have read Dr. Bush's long report with the greatest interest.

I have especially noted his proposal for dealing with the Office of Scientific Research and Development after the defeat of Germany. Furthermore, the appropriate Army officers have had extended conferences with Dr. Bush as to the working out of this program.

It will require careful handling to be sure that the scientific effort in the Office of Scientific Research and Development will continue to be fully effective in helping to bring about the final defeat of Japan, but those who have the particular responsibility in the Army are confident that Dr. Bush's plan can be so worked out in practice as to accomplish this result.

Faithfully yours,

*Henry L. Stimson*  
Secretary of War.

The President,

The White House.

Franklin D. Roosevelt Library  
DECLASSIFIED  
DOD DIR. 5200.9 (9/27/58)

Date- 3-19-59

Signature- *Carl S. Spencer*

~~SECRET~~

Atomic  
Bomb  
File

O.F. 10-B

#2590

LILLIAN:

Grace Tully told me to give this  
to you to be put in the safe.

Audrey

4367

THE WHITE HOUSE  
WASHINGTON

November 21, 1944.

MEMORANDUM FOR

DR. VANNEVAR BUSH

Dear Van:-

This from Edgar Hoover will  
interest you. Probably it should be  
followed up.

F. D. R.



2590

JOHN EDGAR HOOVER  
DIRECTOR



Federal Bureau of Investigation  
United States Department of Justice  
Washington, D. C.  
November 16 1944

PERSONAL ~~REDACTED~~  
BY SPECIAL MESSENGER

10 B

Honorable Harry L. Hopkins  
The White House  
Washington, D. C.

Dear Harry:

A German espionage agent presently in the United States under the control of this Bureau advised that he was instructed to obtain, among other subjects, information concerning (1) the progress made by the United States since 1941 with respect to the development of atomic explosives, (2) whether "heavy water" is used instead of helium in their manufacture, (3) the type of container in which the atom of uranium is split, and (4) the probable reaction of the people of the United States if Germany used the explosive power obtained through the splitting of the uranium atom.

This information is being made available to you as possibly indicating the degree to which the Germans have progressed in the development of atomic explosives. There are two other recent developments of possible interest in this connection. The first of these is that the Germans have recently made numerous inquiries of other espionage agents controlled by this Bureau concerning the exact size, number of employees, and location of various armament plants in the United States. For example, the following inquiry was received from Germany by a double agent controlled by this Bureau:

"OF GREAT INTEREST IS SIZE, FLOOR AREA, TOTAL EMPLOYEES OF BELL, BOEING, BREWSTER, BRIGGS, BUDD, CHRYSLER, CONSOLIDATED VULTEE, CURTISS WRIGHT AIRPLANE DIVISION, DOUGLAS, EASTERN, FISHER BODY, FORD, GOODYEAR, GRUMMAN, HIGGINS, HUDSON, KAISER FACTORIES. CONTINUATION FOLLOWS."

The continuation of the above message has not as yet been received.

DECLASSIFIED

E.O. 11652, Sec. 5(E)(2)  
Justice Dept. letter, 9-21-72  
By RHP, NLR, Date AUG 20 1973

The second recent development of interest is the receipt of an inquiry from the Germans through a controlled double agent channel indicating that the Germans are desirous of determining the extent of off-shore coastal protection on the Atlantic seaboard of the United States and particularly as to any areas where this protection may have been curtailed.

With expressions of my highest esteem,

Sincerely yours,

*Edgar*

B. B.

I believe Lillian Hennesson  
has sent you for special  
filming the previous on this.

Yes

A.C.T.

10-B

OFFICE FOR EMERGENCY MANAGEMENT  
OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT  
1530 P STREET NW.  
WASHINGTON, D. C.

VANNEVAR BUSH  
Director

WHITE HOUSE  
NOV 25 8 29 AM '44  
November 24, 1944  
RECEIVED

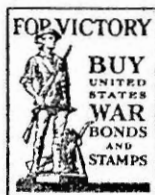
The President,  
The White House,  
Washington, D.C.

Dear Mr. President:

Your note of November 21 to Dr. Bush with the accompanying copy of Mr. Hoover's letter to Mr. Hopkins has come to me in Dr. Bush's absence. We appreciate having the German interest in this matter brought to our attention, and I am taking steps at once to see what action, if any, is necessary on our part.

Respectfully yours,

J. B. Conant  
J. B. Conant,  
Acting Director.



~~TOP SECRET~~  
26 November 1944

From: U. S. Military Attache, London, England

To : The President of the United States

Nr : 831. Filed 26/1037Z

Prime Minister to President Roosevelt Personal and ~~TOP SECRET~~ No. 831.

Cherwell has told me how very kind the U. S. Army and Navy were in showing him their latest developments in many fields and in entertaining him at their various establishments. Perhaps if you thought it well, you would transmit my thanks to them and especially to General Groves who went to so much trouble to show Cherwell the latest developments in his particular field.

Perhaps you might also think fit to express my gratitude to the TUVE establishment at Silver Springs whose work on the proximity fuses has proved so valuable in defending London against the robot bombs.

MAP ROOM NOTE: TUVE establishment named for Dr. Merrill A. Tuve, a professor from Carnegie Institute of Technology. - His work is in the laboratory of Terrestrial Magnetism Department of OSRD. (Organization of Scientific Research and Development) - He is in Section T which comes under the Navy and to which he is attached for this purpose. In Section T he is engaged in Applied Physics, apparently working on the type of fuse mentioned above. - He evidently took Lord Cherwell under his wing when he was on his visit here.

Recd 261330Z

TPVU

DECLASSIFIED by British  
Govt., State Dept. tel., 3-29-72  
By E. H. Parks Date MAY 6 1972

~~TOP SECRET~~  
~~TOP SECRET~~

FROM The Prime Minister TO The President

SERIAL or FILE NO. 831, 26 Nov 44.  
DATE

TOR MAP ROOM 261330Z VIA Army Code Room

SUBJECT: Expression of thanks.

ACTION:

1. To the President via usher.
2. No reply made to the PM by the President.

COPIES TO:	DATE:	BY DIRECTION OF:

070



~~SECRET~~  
[REDACTED]  
[REDACTED] - TOT

WFE

14 January 1945

From: U. S. Military Attache, London  
To: President of the United States  
Nr: 887      Filed 141027Z

Prime Minister to President Roosevelt  
Number 887.

Tube Alloys.

I should like Field Marshal Wilson to  
succeed Field Marshal Dill on the Combined  
Policy Committee and hope that this will be  
agreeable to you.

End

RRH/rh

REGRADED UNCLASSIFIED by British  
Govt., State Dept. tel., 3-29-72  
By R. H. Parks      Date MAY 6 1972

~~SECRET~~  
[REDACTED]

FROM THE PRIME MINISTER TO THE PRESIDENT  
SERIAL or FILE NO. #887, 14 January 1945  
DATE  
SUBJECT:

Marshal Wilson's appointment to Combined Policy Committee, Tube  
Alloys.

ACTION:

1. Answered by PRES-PM #701, 14 January 1945.

COPIES TO:	DATE:	BY DIRECTION OF:

INDEXED:  
210 (1)

# Churchill & Roosevelt

---

## The Complete Correspondence

### III. Alliance Declining

FEBRUARY 1944 – APRIL 1945

EDITED WITH  
COMMENTARY BY

Warren F. Kimball

Princeton University Press, Princeton, New Jersey

as is necessary to insure passage to the Black Sea without delay or interference of the "Naval auxiliary *Catoctin*, not a combatant vessel" and also four smaller Naval vessels which are really mine sweepers and which the Navy wishes to send to the Black Sea.

We will have Steinhardt give the Turks identical information regarding the passage of American airplanes to be used by my party and for daily mail trips. Roosevelt [WDL]

[MR\*. *FRUS, Yalta Conf.*, p. 35.]

The Combined (Anglo-American) Policy Committee on Atomic Energy had been established as a result of agreements reached by Churchill and Roosevelt during the Quebec Conference in 1943. TUBE ALLOYS was the codename for the atomic energy programs being conducted jointly by Great Britain and the United States.

### C-887

London [via U.S. Army]  
Jan. 14, 1945, 1027 Z

Prime Minister to President Roosevelt.

TUBE ALLOYS.

I should like Field Marshal Wilson to succeed Field Marshal Dill on the Combined Policy Committee and hope that this will be agreeable to you.

[MR\*. *R&C*.]

### R-701

Hyde Park, N.Y. [via U.S. Navy]  
Jan. 14, 1945, 1837 Z

Top Secret and Personal, from the President for the Prime Minister.

Reference your Number 887. Delighted to have Wilson on the Combined Policy Committee. Roosevelt

[MR\*]

In October 1944 the Yugoslav Partisan leader, Marshal Tito, met with the Prime Minister of the Royal Yugoslav Government, Ivan Subasić, to discuss the formation of a unified government. Since Tito's forces controlled large segments of Yugoslavia and also had the clear, if unspoken, support of the Soviet Union, the best Subasić could do was to accept a compromise which

~~TOP SECRET~~  
PRIORITY

14 JANUARY 1945

FROM: OPNAV

TO : ALUSNA, LONDON

141837Z NCR 4919

NUMBER 701, ~~TOP SECRET~~ AND PERSONAL, FROM THE PRESIDENT FOR THE  
PRIME MINISTER.

Reference your Number 887. Delighted to have Wilson on the  
Combined Policy Committee.

ROOSEVELT

Released 141837 January 1945.

BOYCE P. PRICE,  
Captain, C.E.

DECLASSIFIED  
By Deputy Archivist of the U.S.  
By leg Stewart  
Date NOV 1 1971

FROM THE PRESIDENT TO THE PRIME MINISTER  
SERIAL or FILE NO. #701, 14 January 1945  
DATE  
SUBJECT: Marshal Wilson's appointment to Combined Policy Committee.

ACTION:

1. Answers PM-PRES #887, 14 Jan 45.
2. No answer.

COPIES TO: DATE: BY DIRECTION OF:

INDEXED:

210 (1)



A Bomb File

HARRY HOPKINS PAPERS  
Special Assistant to President, 1941-1945  
Miscellaneous FBI Reports, 1944-1945

DECLASSIFIED

E.O. 11652, Sec. 5(E)(2)  
Justice Dept. letter, 9-21-72  
By DBS, NLR, Date AUG 9 1975

*orig to President*

February 9, 1945

~~SECRET~~  
PERSONAL AND ~~CONFIDENTIAL~~  
BY SPECIAL MESSENGER

Honorable Harry L. Hopkins  
The White House  
Washington, D. C.

Dear Harry:

As you are well aware, the Army for the past two years has been vitally interested in a highly secret project for the development of an atomic explosive. This explosive, as you know, involves the release of energy through the shattering of atoms of heavy elements.

During the period that the Army has been engaged in the supervision of this experimentation, numerous efforts have been made by the Soviets to obtain the highly secret information concerning the experimentation and this Bureau has been actively following such Soviet efforts.

The German Government has also been interested in the same type of experimentation in Germany and has attempted to get information regarding the atomic experimentation in the United States.

Recently, in connection with the operation of a radio station by a German agent under control of the Federal Bureau of Investigation but which station the Germans believe to be a free station, an inquiry was received from Germany containing the following questions regarding the status of atomic explosive experimentation in the United States:

First, where is heavy water being produced? In what quantities?  
What method? Who are users?

Second, in what Laboratories is work being carried on with large quantities of uranium? Did accidents happen there? What does the protection against Neutronic Rays consist of in these Laboratories? What is the material and the strength of coating?

Third, is anything known concerning the production of bodies or molecules out of metallic uranium rods, tubes, plates? Are these bodies provided with coverings for protection? Of what do these coverings consist?

We have already advised the appropriate authorities in the War Department concerning these German inquiries.

I thought the foregoing would be of considerable interest to the President.

With best wishes and kind regards,

Sincerely yours,

# GENERAL SERVICES ADMINISTRATION



*National Archives and Records Service*  
Washington 25, D.C.

August 7, 1963

IN REPLY REFER TO:

Dr. Elizabeth B. Drewry  
Director  
Franklin D. Roosevelt Library  
Hyde Park, New York

Dear Elizabeth:

There is attached a copy of the file copy of a memorandum sent by James Byrnes to President Roosevelt on March 3, 1945. Mike Simmons found it in the records of the Office of War Mobilization and Reconversion. This document was handed by President Roosevelt to Secretary Stimson, and the signed original is now in the records of the Manhattan project in the custody of the World War II Records Division in Alexandria. As the document was declassified in 1957, I thought you might wish a copy for FDR's papers. This document is cited and discussed on pages 339-340 of Hewlett and Anderson's The New World, 1939-1946.

Sincerely yours,

*Herman Kahn*  
Herman Kahn  
Assistant Archivist  
for Civil Archives

Enclosure

# GENERAL SERVICES ADMINISTRATION



*National Archives and Records Service*  
*Washington 25, D.C.*

August 7, 1963

IN REPLY REFER TO:

Dr. Elizabeth B. Drewry  
Director  
Franklin D. Roosevelt Library  
Hyde Park, New York

Dear Elizabeth:

There is attached a copy of the file copy of a memorandum sent by James Byrnes to President Roosevelt on March 3, 1945. Mike Simmons found it in the records of the Office of War Mobilization and Reconversion. This document was handed by President Roosevelt to Secretary Stimson, and the signed original is now in the records of the Manhattan project in the custody of the World War II Records Division in Alexandria. As the document was declassified in 1957, I thought you might wish a copy for FDR's papers. This document is cited and discussed on pages 339-340 of Hewlett and Anderson's The New World, 1939-1946.

Sincerely yours,

*Herman Kahn*

Herman Kahn  
Assistant Archivist  
for Civil Archives

Enclosure

OFFICE OF WAR MOBILIZATION AND RECONVERSION  
WASHINGTON, D. C.



OFFICE OF THE DIRECTOR

March 2, 1945.

~~SECRET~~

MEMORANDUM FOR THE PRESIDENT

FROM: James F. Byrnes

I understand that the expenditures for the Manhattan project are approaching 2 billion dollars with no definite assurance yet of production.

We have succeeded to date in obtaining the cooperation of Congressional Committees in secret hearings. Perhaps we can continue to do so while the war lasts.

However, if the project proves a failure, it will then be subjected to relentless investigation and criticism.

I know little of the project except that it is supported by eminent scientists. Even eminent scientists ~~are subject~~ may be the continuance of a project rather than to concede its failure. Also, it may be feasible to continue the experiment on a reduced scale.

In any event, no harm could come from an impartial investigation and review by a small group of scientists not already identified with the project.

Such a review might hurt the feelings of those now engaged in the project. Still 2 billion dollars is enough money to risk such hurt.

A favorable finding would justify continuance. An unfavorable finding would at least indicate the need for further justification by those who are responsible for the project.

In any event, it would be clear that we were mindful of the tremendous expenditure of men and materials.

CLASSIFICATION CANCELED

By authority of: letter dated 8-12-57  
from C. L. Marshall, Director, Division of Classification, A.E.C.  
Name and title of person making the change:  
John F. Simmons, NCAS

Date July 29, 1963

~~SECRET~~

Changed as per attached. copy (51)

*Examine L. B. Nichols  
should have 2 or 3 scientists to whom middle  
man is recommended in the project as check  
it and defend that results justify continuance... effects  
project*

OFFICE OF WAR MOBILIZATION AND RECONVERSION  
WASHINGTON, D. C.



OFFICE OF THE DIRECTOR

March 2, 1945.

~~SECRET~~

MEMORANDUM FOR THE PRESIDENT

FROM: James F. Byrnes *James F. Byrnes*

I understand that the expenditures for the Manhattan project are approaching 2 billion dollars with no definite assurance yet of production.

We have succeeded to date in obtaining the cooperation of Congressional Committees in secret hearings. Perhaps we can continue to do so while the war lasts.

However, if the project proves a failure, it will then be subjected to relentless investigation and criticism.

I know little of the project except that it is supported by eminent scientists. Even eminent scientists ~~are subject~~ *may* ~~to the continuance of~~ a project rather than to concede its failure. Also, it may be feasible to continue the experiment on a reduced scale.

In any event, no harm could come from an impartial investigation and review by a small group of scientists not already identified with the project.

Such a review might hurt the feelings of those now engaged in the project. Still 2 billion dollars is enough money to risk such hurt.

A favorable finding would justify continuance. An unfavorable finding would at least indicate the need for further justification by those who are responsible *for the project*.

In any event, it would be clear that we were mindful of the tremendous expenditure of men and materials.

CLASSIFICATION CANCELED  
By authority of: letter dated 8-12-57  
from C. L. Marshall, Director, Division of Classification, A.E.C.  
Name and title of person making the change:  
*John F. Simmons, NCAS*  
Date *July 29, 1963*

~~SECRET~~

*Changed as per attached copies.*  
*(57)*

*James F. Byrnes  
I don't know 2 or 3 scientists to whom I will  
give no money involved in the project as does  
it and depend that reveals justifying continuance of the project*

*regardless of whether  
future success or failure.*



*Declassified*  
CLASSIFICATION CHANGED  
To *CONF*  
Of *original*  
By *AC Turner*  
Date *6/16/47*

~~RESTRICTED~~  
*Construction*

MEMORANDUM FOR THE PRESIDENT

FROM: JAMES F. BYRNES

I understand that the expenditures for the Manhattan project are approaching 2 billion dollars with no definite assurance yet of production.

We have succeeded to date in obtaining the cooperation of Congressional Committees in secret hearings. Perhaps we can continue to do so while the war lasts.

However, if the project proves a failure, it will then be subjected to relentless investigation and criticism.

I know little of the project except that it is supported by eminent scientists. Even eminent scientists may continue a project rather than concede its failure. Also, it may be feasible to continue the experiment on a reduced scale.

In any event, no harm could come from an impartial investigation and review by a small group of scientists not already identified with the project.

Such a review might hurt the feelings of those now engaged in the project. Still 2 billion dollars is enough money to risk such hurt. I think Dr. Bush would be glad to have two or three scientists whose pride was in no way involved in the project, check it and report that results justify continuance of the project.

A favorable finding would justify continuance, regardless of future success or failure. An unfavorable finding would at least indicate the need for further justification by those who are responsible for the project.

In any event, it would be clear that we were mindful of the tremendous expenditure of men and materials.

*Declassified*  
CLASSIFICATION CHANGED  
To *CONF*  
Of *own*  
By *REC*

By Authority *EC Turner*  
Date *6/16/47*

*per letter dated 8-12-57*  
*from C. L. Marshall, Dir.*  
*Division of Classification,*  
*March 30, 1945*

~~PRODUCTION~~  
*Construction*

MEMORANDUM FOR THE PRESIDENT

FROM: JAMES F. BYRNES

I understand that the expenditures for the Manhattan project are approaching 2 billion dollars with no definite assurance yet of production.

We have succeeded to date in obtaining the cooperation of Congressional Committees in secret hearings. Perhaps we can continue to do so while the war lasts.

However, if the project proves a failure, it will then be subjected to relentless investigation and criticism.

I know little of the project except that it is supported by eminent scientists. Even eminent scientists may continue a project rather than concede its failure. Also, it may be feasible to continue the experiment on a reduced scale.

In any event, no harm could come from an impartial investigation and review by a small group of scientists not already identified with the project.

Such a review might hurt the feelings of those now engaged in the project. Still 2 billion dollars is enough money to risk such hurt. I think Dr. Bush would be glad to have two or three scientists whose pride was in no way involved in the project, check it and report that results justify continuance of the project.

A favorable finding would justify continuance, regardless of future success or failure. An unfavorable finding would at least indicate the need for further justification by those who are responsible for the project.

In any event, it would be clear that we were mindful of the tremendous expenditure of men and materials.

*Declassified*  
CLASSIFICATION CHANGED  
To *CONF*  
Of *own*  
By *per letter dated 8-12-57*  
Date *6/16/47*  
Authority *per C. L. Marshall, Dir. AEC*  
March 3, 1945

~~PRODUCTION~~  
*Construction*  
~~CONFIDENTIAL~~

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OFFICE OF WAR MOBILIZATION AND RECONVERSION  
WASHINGTON, D. C.



OFFICE OF THE DIRECTOR

March 2, 1945.

~~SECRET~~

MEMORANDUM FOR THE PRESIDENT

FROM: James F. Byrnes *James F. Byrnes*

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In any event, it would be clear that we were mindful of the tremendous expenditure of men and materials.

CLASSIFICATION CANCELED

By authority of: letter dated 8-12-57  
from C. L. Marshall, Director, Division of Classification, A.E.C.  
Name and title of person making the change:  
John F. Simmons, NCAS

Date July 29, 1963

~~SECRET~~

*Changed as per attchd. copy*

*Handwritten notes in left margin:*  
I don't know 2 or 3 scientists to whom I'd like to have a meeting in the project and I don't know it and depend that we will justify continuance of the project



OFFICE OF WAR MOBILIZATION AND RECONVERSION  
WASHINGTON, D. C.



OFFICE OF THE DIRECTOR

March 2, 1945.

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CLASSIFICATION CANCELED

By authority of: letter dated 8-12-57  
from C. L. Marshall, Director, Division of Classification, A.E.C.  
Name and title of person making the change:  
John F. Slatons, NCAS

Date July 29, 1963

~~CONFIDENTIAL~~

*Changed as per attched. copy.*

*Handwritten note in left margin:*  
I don't know 2 or 3 scientists to whom we can refer regarding the project as a whole and beyond that we will probably continue to refer to the project.

Removed for exhibition

Julie Dumont to Tax Parks

2/27/95

*Declassified*  
**CLASSIFICATION CHANGED**  
To *CONF*  
Of *own*  
By *ACF*

By Authority

Date

*6/16/47*

*per letter dated 8-12-57  
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*March 3, 1945*

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THE  
NATIONAL ARCHIVES  
OF THE  
UNITED STATES

*5*



4166

THE WHITE HOUSE

WASHINGTON

March 9, 1945.

MEMORANDUM FOR

DR. VANNEVAR BUSH:

FOR YOUR INFORMATION.

"F.D.R." F.D.R.

of

Copy/Confidential memorandum, 2/12/45, re Utilization of Scientific Manpower, from Mrs. Roosevelt, which discusses the unwarranted usurpation of manpower by the National Research Defense Committee and the Office of Scientific Research and Development and the use of that power to protect the pecuniary interests of individual scientists at the expense of the war effort; mentions particularly the loss of the services of men in the Minesweeping Section (620) of the Bureau of Ships.-

Miss Gully - . . .

I believe this is a matter for consideration  
by Dr. Vannevar Bush, Director of the Office of  
Scientific Research and Development.

M. C. L.

Mr Latta -

Miss Gully wants to  
know to whom this should  
be referred —

ZJB

THE WHITE HOUSE  
WASHINGTON

Miss Tully

For the President

from  
Mrs. Roosevelt

4166

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ZJB

THE WHITE HOUSE

WASHINGTON

Miss Tully

For the President

from  
Mrs. Roosevelt



HOPKINS PAPERS, ATOMIC BOMB FILE, Box 132

From the Office of  
V. BUSH

*Two Table Green*  
Mr. Harry Hopkins.

The attached clipping shows  
what can happen when  
control is loose and  
security insufficient.  
It gives sufficient basis  
in itself for insistence  
that knowledge be passed  
only to those who really  
need it.

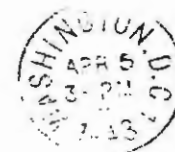
Perhaps you will wish  
to ask "how come"

*ABG*

*V. Bush*

HOPKINS PAPERS, ATOMIC BOMB FILE, BOX 132

OFFICE FOR EMERGENCY MANAGEMENT  
OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT  
1530 P STREET NW.  
WASHINGTON, D. C.



Mr. Harry Hopkins,  
The White House,  
Washington, D.C.

COMMANDER FIFTH FLEET  
UNITED STATES PACIFIC FLEET  
FLAGSHIP OF THE COMMANDER

23 September 1945

~~CONFIDENTIAL~~

Vice Admiral Ross T. McIntyre (MC) USN  
Surgeon General, U. S. Navy  
Room 1072-A, Navy Building  
Navy Department  
Washington, D. C.

Dear Ross:

This follows up my letter of September 9th relative to Naval medical share in the evacuation of prisoners of war. As previously reported, I attended a POW conference in YOKOHAMA September 5th. The great hue and cry created by the conditions noted in the first POW's evacuated, elevated to the highest priority evacuation of all prisoners of war, to be accomplished if possible prior to the moving in of the Sixth Army, scheduled to occupy Western JAPAN. To expedite matters, two seaports, WAKAYAMA and NAGASAKI were named as evacuating points for Western JAPAN. All prisoners were to be diverted to these two seaports, fortunately clear of serious mine hazards. Evacuation was scheduled for September 12th, to be completed if possible in ten days.

At the conference the Army officials were disturbed over the scarcity of Army medical recovery teams and did not think they could get them up from MANILA by the 12th. I was very pleased to offer full Naval medical support of the plan, to include all responsibility for medical processing at both WAKAYAMA and NAGASAKI. I also volunteered Navy medical officers to accompany the Army recovery teams into the various POW camps. This the Army gratefully accepted. Admiral Spruance supported me wholeheartedly and gave me complete medical supervision at both ports.

At WAKAYAMA he placed Rear Admiral Riggs on the cruiser MONTPELIER as Officer-in-Charge, and at NAGASAKI Rear Admiral Fahrion on the WICHITA in similar position. We estimated that approximately 10,000 prisoners would be processed through each port. At WAKAYAMA I placed the CONSOLATION and SANCTUARY as my major medical units as no docking facilities were available there. At NAGASAKI I placed the HAVEN, with the HOPE or SANCTUARY to move there later. Thus I had a beautiful, splendidly equipped, floating hospital for each port. The CONSOLATION at WAKAYAMA, the HAVEN at NAGASAKI, with the SANCTUARY and HOPE in the backfield. These could handle all our seriously ill. The big problem was to get out the mass of ambulatory prisoners not requiring hospitalization. The original plan was to evacuate the POW's after unloading the transports bringing in the army of occupation troops. These transports, of course, were not available, being mounted in the PHILIPPINES, the MARIANAS and HAWAII.

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DDO 01 5200.2 (9/27/58)

Ross T. McIntyre Papers, Box 6, Willcutts

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~~CONFIDENTIAL~~

Vice Admiral Ross T. McIntyre

9-23-45

My experience in YOKOHAMA convinced me that the Japanese intended no further resistance and that the great fire support and air cover planned for the landing of the Army could be curtailed to a minimum show of force. I recommended that CVE's be stripped of their planes and used as transports for shuttle runs between our evacuating ports and OKINAWA. Admiral Spruance concurred.

I stripped OKINAWA of all excess doctors, thanks to the hearty cooperation of Albright and Templeton. I was thus able to augment the hospital ships and our "converted transports" with additional medical personnel. I also placed six medical officers as processing and medical examiners at WAKAYAMA and the same number at NAGASAKI. These two teams were to work at the docks where all prisoners were to be screened. I declared a basic principle that all prisoners were to be considered patients until cleared by my medical examiners. This gave me medical control of the situation for delousing, screening of communicable disease, and immediate hospitalization to the hospital ships of all the seriously ill.

I called a conference of all the medical officers involved, aboard the NEW JERSEY, and briefed them on the general medical evacuation plan. All were enthusiastic and I was very pleased with the opportunity for the Naval Medical Department to put on an urgently worthwhile show.

I sent Lieutenant Harvey (HC) as my representative to WAKAYAMA and took Lieutenant (jg) Gressit (H-S) with me to NAGASAKI. At WAKAYAMA no ship could reach the dock so evacuation of all sick and ambulatory type prisoners was made by boat. The CONSOLATION served as a floating hospital to remain until all patients had been cleared. The SANCTUARY to carry the less seriously ill by shuttle trips to OKINAWA, and the CVE's to carry the well. This worked splendidly. Total of 2578 prisoners were evacuated from WAKAYAMA, far less than anticipated.

At NAGASAKI the HAVEN tied up at the dock and in the midst of stench and wreckage, a very practical medical processing station was established. The atomic bomb damaged all dock buildings severely and I shall never forget the nauseating odor and accumulated filth in these buildings. We had to remove dead Japanese, teeming with flies and maggots, clear wreckage and really build from scratch our processing station. We built showers on the dock, using hot water supplied by the HAVEN, and screened off sections of a great warehouse into delousing, dressing and examining rooms. Fortunately, a spur track came directly to the dock and a great portion of our prisoners were brought to us by very good train service. We arrived NAGASAKI the morning of the 11th and in 30 hours had our processing and medical plant ready for reception of the prisoners. We employed

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Vice Admiral Ross T. McIntyre

9-23-45

300 Japanese laborers as a working party and after repeated "hosings" finally removed the stench and filth.

From NAGASAKI I dispatched ten medical officers and ten corpsmen with Army recovery teams to the prison camps scattered throughout KYUSHU. The Army had Colonel Griffin in charge of the NAGASAKI area and Major Maloney in charge at WAKAYAMA. Cordial cooperation with the Army officials was instantly established and maintained. At NAGASAKI I invited Colonel Griffin aboard the HAVEN and Captain Parsons graciously included us in his private mess.

I am pleased to report that although we found many heartbreaking and pitiful cases and many authenticated instances of Japanese cruelty and ruthless brutality, on the whole over 90% of the prisoners were in very fair condition and able to be evacuated without hospitalization. The exact figures are not yet determined but I can assure you that most careful screening and medical examination indicates serious hospital cases to be running less than 8%.

I am very proud of the HAVEN, CONSOLATION and SANCTUARY. Captains Parsons, Newhauser and Davis supported me wholeheartedly and developed the details of my processing plans in a most efficient manner. The staff doctors on the two cruisers, Commander R. H. Holcomb on the MONTEPELIER, and Commander J. J. Timmes on the WICHITA, did outstanding work as liaison officers between the hospital ships and Admirals Riggs and Fahrion. The nurses met all demands, working indefatigably. The Red Cross cooperated wholeheartedly and added a very cheerful aspect to the picture. All did excellent work and the evacuation was completed within the ten-day period. From WAKAYAMA 2,578 POW's were evacuated and from NAGASAKI just under 10,000.

You will hear much of the brutality and cruelty of the Japanese in charge of the prison camps. I know of many authenticated cases indicating extreme cruelty. The Jap military are very hard taskmasters, even with their own people. Corporal punishment is a common procedure for petty offenses. Many are really sadistic and undoubtedly performed numerous acts of brutality and cruelty. However, I invariably found on close questioning that the prisoner had been caught for some infraction of prison rules such as smoking out of hours, sitting on bunks or slacking in work. Many of the prisoners were caught pilfering sugar or food while working at the docks. The Japs made surprise inspections and when pilfering was discovered punishment was prompt and severe. In fairness, I must say that a number of the older men in the camps told me that the treatment, while most rugged, was on the whole

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Vice Admiral Ross T. McIntyre

9-23-45

not bad. They expected quick punishment when caught in some act and got it.

One case in particular shocked me. A Dutch soldier was made to squat five and one-half hours, as punishment for a petty offense, with a bamboo stick placed in and held in the flexed popliteal spaces. Ischemic paralysis developed (Volkmann's type) and he was delivered to us with both legs amputated at the knee.

The HAVEN has many heartbreaking stories. Many of the prisoners carried certified statements of harsh and cruel treatment.

Our medical screening was planned so that every prisoner was routed past a battery of trained nurses and interpreters where a check-off questionnaire was made on each man. This included a brief summary of military and naval experience, date of capture, sickness in camp, mistreatment or punishment in camp, and a check as to the quality and quantity of food, whether worked or not, and the prisoner's reaction as to whether he considered his imprisonment had been fair, no complaint, brutal or cruel. The HAVEN has over 9,000 of these carefully prepared records in addition to complete medical and clinical records of those requiring hospitalization. I considered it a rare opportunity for a factual summary covering over 9,000 prisoners. It was an extra load put on the HAVEN but Parsons saw my point and cooperated enthusiastically. The clinical records will include full laboratory findings, blood, stool (the first 40 stools examined showed over 70% infestations with ascaris, E. histolytica and hookworm), urine, etc., electrocardiograph and X-ray of chest when indicated. The HAVEN is assembling all this data which the Bureau will receive in good time.

Another case which may be brought to your attention is one of a Javanese-Dutch soldier. Last November he had been removed from POW Camp No. 2 by the Japanese officials with a diagnosis of leprosy, to a leprosarium in Southern KYUSHU. I investigated his record and concluded that he was entitled to full POW consideration. He had been confined many months in JAPAN and was allegedly free of the disease at time of capture. I insisted that the Japanese bring him back to us which they did and I placed him on the HAVEN. We were collecting a great number of British, Australian and Dutch nationals, many of them very sick, and it was my thought that as soon as the evacuation was completed at NAGASAKI we would divert the HAVEN to JAVA and AUSTRALIA where the leper could be returned home and the sick British and Dutch nationals transferred without delays at OKINAWA or MANILA. Cincpac now rules that all hospital ships are urgently needed to transfer American sick from Pacific ports to the U.S. and has denied my request for the HAVEN's special trip. We have the leper quarantined on the HAVEN but will transfer him to the Army Reamp Evacuating Facilities at OKINAWA and I shall

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Vice Admiral Ross T. McIntyre

9-23-45

probably be shot. I could not see the poor devil left in JAPAN. I consider his case line of duty as much as any war or camp wound.

Now, a special preliminary report which I believe will prove to be of great clinical importance:

At the earliest moment upon arrival at NAGASAKI, I inspected the great section of the city destroyed by the atomic bomb. It was appalling. The official records indicate from 30 to 40 percent of the city destroyed. I consider the destruction far greater as much of the buildings which remain standing are severely damaged. In my judgment, less than 20% of the buildings of NAGASAKI escaped injury. Forty percent were utterly destroyed.

The main hospitals and the NAGASAKI Medical College were completely ruined and practically all medical equipment destroyed. Twelve out of twenty-one medical professors, including the president of the NAGASAKI Medical College, and about three-fourths of the medical staff were reported killed. This left NAGASAKI with practically no hospital facilities. A partially demolished school building had been converted into an emergency hospital with a capacity of about 300 bed patients, plus a very active out-patient service.

I contacted the superintendent of this hospital and requested permission to do some clinical work that would support their clinical findings. I stressed support so as not to offend them. The superintendent was very respectful and apparently anxious to please me. He stated they were still receiving about 20 new cases daily, patients who, apparently uninjured at the time of the bomb explosion, now noted falling out of the hair and a great weakness. They were found to be suffering from severe anemia, both white and red cells extremely low. They became progressively weaker and many died within a few days or weeks. The actual mortality and morbidity rate I was unable to establish as the improvised hospital maintained no cross index or summary of the anemic cases, treating all cases simply as atomic bomb victims. The new admissions to the hospital were now largely of two types: one, patients without apparent injury at time of the explosion but who were reporting because of loss of hair, extreme weakness and the failure of any new laceration, boil or lesion to heal; second, delayed or incomplete healing of injuries received at the time of the bomb explosion. The superintendent declared that an average of 16 cases a day were dying.

I requested permission to perform autopsies on recent dead. He hesitated and again I stressed the importance of supporting the autopsy findings. With embarrassment, he then said I was welcome to anything I desired but that he was so sorry that his knives were so dull, his equipment

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Vice Admiral Ross T. McIntyre

9-23-45

so scanty. I then saw the light and told him what I wished to do was purely humanitarian and that I would be very happy to supply him with urgently needed vitamins, plasma, special drugs, and DDT to clear his hospital of swarming flies and mosquitoes which were awful. I told him that we had on the HAVEN a fully equipped hospital with a staff of fine specialists, that I was in a position to bring over a portable X-ray (they had no X-ray equipment) and equipment for performing biopsies, special blood work and complete autopsies. The superintendent and his chief of staff were delighted and gave me complete entree.

Again Captain Parsons supported me wholeheartedly and his staff were enthusiastic. Commander Barbeck brought over the portable X-ray and checked lungs, bones, etc. Lieutenant Commander James Beck, an excellent pathologist from Templeton's outfit at OKINAWA, and Lieutenant Meiser of the HAVEN alternated days at a time performing autopsies and collecting specimens.

I personally witnessed two autopsies and was impressed with general negative findings. Both were anemic cases, one 15 years and the other 21, males. Bone marrow did not show any aplastic findings but the pathologist stressed that the peripheral blood exhibited hypoplasia. The cells appeared to be retarded and immature, simulating a type of pernicious leukopenia or agranulocytosis. The spleen was small, the liver not enlarged nor reduced in size but showed some cloudy swelling. Kidneys, no gross pathology. Lymph nodes not enlarged, if anything smaller in size, reddish, soft and edematous. Lungs were negative, heart negative. Bone, cancellous portion purple red, semi-liquid and non-granular. Eyes, none of the cases I saw had severe eye symptoms. Those close enough to have had their eyes affected by the Blind-ing flash were killed instantly or died soon after, I was told. Blood findings, red cells two million and in the second case one million; white cells fifteen hundred and in the second case five hundred.

The WICHITA dentist examined the teeth of several patients and was impressed with the possible relationship to those findings in jawbones and teeth which had been reported in cases of high radiation. There was marked atrophy of the alveoli resulting in loosening of teeth, and hemorrhages. These dental defects were not from malnutrition or old age as they occurred even in young children suffering with this strange delayed anemia resulting from exposure to the bomb or within the bombed area.

Summary of findings: anemia most conspicuous; petechial hemorrhages into the skin, mucous membrane and other parts; changes in bone marrow and spleen suggesting atrophy or hypoplasia. Cause of death considered to be a hypoplastic type of anemia. These remarks may have to be revised after complete study of tissue removed at autopsies has been accomplished on the HAVEN and at the Naval Medical Center.

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Vice Admiral Ross T. McIntyre

9-23-45

The dead and missing at NAGASAKI now exceed 19,500. These are official Japanese figures. Number of wounded is a variable figure approaching 50,000. I was informed that almost all those who were within a radius of one kilometer of the center of the atomic bomb explosion were killed immediately or have died since. A few who were in shelters within this radius survived. Most of the patients now in the hospitals are burn and fracture cases and the delayed anemic cases. These anemic cases, at both NAGASAKI and HIROSHIMA, are still coming in but in diminishing numbers.

I requested and directed that the completed study of these cases be forwarded to the Bureau as soon as possible. Specimens will be forwarded to the Naval Medical School (please inform Captain Pugh that I did not forget him).

During my stay at NAGASAKI, Generals Farrel and Newton, special War Department bomb investigators arrived. I had them on board the HAVEN for breakfast. They remained in NAGASAKI only a few hours. They seemed very pleased with our findings and requested that we confer with Colonel Warren due to arrive soon with a medical section of his committee. I explained to General Farrell that we were not trespassing upon the War Department's prerogatives. That the clinical findings from radioactivity were diminishing and varying by the hour and that with the availability of the HAVEN I considered it highly important to make this clinical investigation.

We checked sections of the bombed area for radioactivity and brought back specimens of the earth but got essentially negative results after exposure on X-ray film eleven hours. General Farrell made tests September 14th with his special instruments and reported no radioactivity.

A confidential report sent in by Colonel Warren September 23rd revealed low activity at selected spots near the center of the explosion but no activity a few miles away, on the perimeter of the destroyed area.

I departed NAGASAKI September 17th to inspect the POW work then being completed at WAKAYAMA. I started by train as I was anxious to pick up any news of potential epidemics in Western HONSHU. I was caught in a very severe typhoon at MOJI and had to detour, never did get to WAKAYAMA and finally joined the NEW JERSEY at YOKOSUKA after a five-day, wild trip by train, Japanese minesweeper across the Inland Sea, finally picking up the TOKYO express at OSAKA. (I do not wish to bore you with so much detail but as I was really the first Naval officer to invade the Inland Sea I am sending you a copy of my special report to Admiral Spruance.)

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Vice Admiral Ross T. McIntyre

9-23-45

This trip gave me an opportunity to check the bomb victims at HIROSHIMA. Here again I noted the same type of delayed anemia. The number of new cases was rapidly falling off however and no radioactivity could be found in the devastated area. The superintendent of the Red Cross hospital stated that people who entered HIROSHIMA within one week after the bomb exploded and who were not in the city on the tragic day, were affected by loss of hair and a low white blood count. He does not believe that anybody was injured by radioactivity after the first week.

I was again impressed at HIROSHIMA with the tragic loss of medical equipment and personnel and I do believe, Ross, that the HAVEN's availability at NAGASAKI permitted the first factual and scientific approach to the study of this delayed type of anemia occurring in victims of the lethal rays from the atomic bomb. I am sure Captain Parsons and his staff will render you a most complete report. Once I had made contact at the hospital, the HAVEN staff followed through in fine form.

I am also enclosing outline of notes covering the health conditions noted in KYUSHU, HONSHU and SHIKOKU, and reported conditions in HOKKAIDO. You will note that there are really no epidemic diseases now prevalent in JAPAN except water-borne, - dysentery and typhoid. There is no cholera and no serious mosquito-borne disease. Like England and the U.S., Japan has come through the war with a surprisingly low incidence of epidemic diseases.

As you know, the Fifth Fleet has taken over all Japanese territorial waters, having relieved the Third Fleet which departed for the homeland.

We are now in the midst of landing the Sixth Army in Western JAPAN. This includes the Fifth Marine Corps which will occupy the NAGASAKI area. Headquarters of the Sixth Army will be at Kyoto, with the Eighth Army and SCAP at Tokyo and Yokohama. The NEW JERSEY will remain at Yokosuka (Yokohama), former naval base of the Japanese fleet, for an indefinite period.

I am making a complete survey of medical personnel of the Fifth Fleet, to include the Naval Operating Base at Okinawa. I am sure we have excess medical personnel and will recommend early return of as many medical officers as possible consistent with the operational phase involved in landing the army of occupation. The landings are proceeding in a very orderly manner with no Japanese resistance. Our own mine fields and the current typhoon season constitute the main hazards. The landings are scheduled to be completed by mid-October.

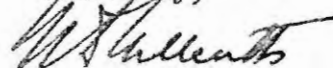
Warmest personal regards.

Franklin D. Roosevelt Library

DECLASSIFIED

DDP 1-8 5200.1 (9/27/88)

Sincerely,



M. D. WILLCUTTS  
Commodore (MC) USN



THE WHITE HOUSE

Personal & [REDACTED]

BY HAND

Miss Grace Tully

c/o The Archivist of the United States,

National Archives Bldg.,

Wash., D. C.

GENERAL SERVICES ADMINISTRATION



*National Archives and Records Service*

FRANKLIN D. ROOSEVELT LIBRARY  
HYDE PARK, N. Y.

Papers of Franklin D. Roosevelt  
Miscellaneous Posthumous Manuscripts

THE WHITE HOUSE  
WASHINGTON

November 8, 1945.

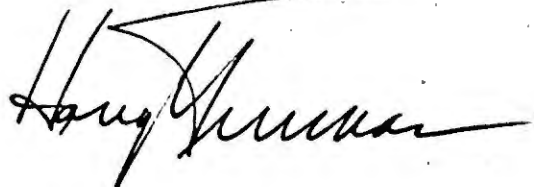
Personal and [REDACTED]

Dear Miss Tully:

I will appreciate it very much if you will be good enough to make available to the Secretary of State, all correspondence and papers in the files of President Roosevelt, relating to the atomic bomb.

With kindest personal regards,

Very sincerely yours,



Miss Grace Tully,  
c/o the Archivist of the United States  
National Archives Building,  
Washington, D. C.

**GENERAL SERVICES ADMINISTRATION**



*National Archives and Records Service*

FRANKLIN D. ROOSEVELT LIBRARY  
HYDE PARK, N. Y.

Papers of Franklin D. Roosevelt  
Miscellaneous Posthumous Manuscripts



November 9, 1945.

My dear Mr. Secretary:-

At the request of the President of the United States, I have taken from the files of the late President Roosevelt the enclosed papers relating to the atomic bomb, which he directed me to send to you.

The late President received reports from time to time from Dr. Bush but these were returned to Dr. Bush as soon as the President had read them. On a few occasions, the President directed me to give certain reports and correspondence, sent to him by Dr. Bush, to Admiral Brown to look up in the safe in the Map Room. I understand from Commander ~~Henry~~ that these were all returned to the War Department.

With my very kindest regards,

Always sincerely,

The Honorable  
The Secretary of State,  
Washington, D. C.

(Enclosures)

GENERAL SERVICES ADMINISTRATION

National Archives and Records Service

FRANKLIN D. ROOSEVELT LIBRARY  
HYDE PARK, N. Y.

Papers of Franklin D. Roosevelt  
Miscellaneous Posthumous Manuscripts



LIST OF PAPERS REMOVED FROM THE FILES  
OF THE LATE FRANKLIN D. ROOSEVELT AT  
THE REQUEST OF THE PRESIDENT OF THE  
UNITED STATES, NOVEMBER 9, 1945

\*\*\*\*\*

1. Draft of letter to the Hon. Winston Churchill (no date)
2. Confidential memorandum to Dr. Vannevar Bush from the President, dated October 11, 1941 (original and copy)
3. Copy of memorandum to the President from Dr. V. Bush, dated October 13, 1941.
4. Copy of letter sent to The Honorable Winston Churchill by the President on October 11, 1941.
5. Report of the National Defense Research Committee for the First Year of Operation, June 27, 1940 to June 28, 1941.
6. Secret memorandum to the Director of the Budget from the President, dated January 13, 1942, enclosing letter to the President from Vannevar Bush, Director of Office of Scientific Research and Development, dated January 9, 1942, re Civilian Scientific Corps and the mobilization of same.
7. Letter to the President from Dr. V. Bush, dated March 16, 1942. ✓
8. Copy of memorandum from Dr. V. Bush to Endolph Forster, dated March 16, 1942. ✓
9. Copy of memorandum to Dr. Bush from the President, dated March 20, 1942. ✓
10. Letter to the President from Dr. V. Bush, dated June 19, 1942. ✓
11. Secret memorandum to Dr. Bush from the President, dated July 11, 1942. ✓

## FOREWORD

The story of the development of the atomic bomb by the combined efforts of many groups in the United States is a fascinating but highly technical account of an enormous enterprise. Obviously military security prevents this story from being told in full at this time. However, there is no reason why the administrative history of the Atomic Bomb project and the basic scientific knowledge on which the several developments were based should not be available now to the general public. To this end this account by Professor H. D. Smyth is presented.

All pertinent scientific information which can be released to the public at this time without violating the needs of national security is contained in this volume. No requests for additional information should be made to private persons or organizations associated directly or indirectly with the project. Persons disclosing or securing additional information by any means whatsoever without authorization are subject to severe penalties under the Espionage Act.

The success of the development is due to the many thousands of scientists, engineers, workmen and administrators - both civilian and military - whose prolonged labor, silent perseverance, and whole-hearted cooperation have made possible the unprecedented technical accomplishments here described.

L. R. Groves  
Major General, USA

War Department  
Washington, D. C.

August 1945

## A Talk With Einstein

**C**REDIT for the publication of Professor Einstein's views on the implications of the atomic bomb belongs to one of the most highly regarded broadcasters in the United States, Raymond Swing. Mr. Swing's nightly discussions of world affairs



Lighting-up time 5.9 p.m.  
Sun. rises 6.47 a.m.; sets 4.30 p.m.  
Moon sets 2.58 p.m.  
High water at London Bridge, 7.50 a.m. and 8.44 p.m.



Professor Einstein—  
Gave Mr. Raymond Swing his  
views on the Atom Bomb

command so much respect that he might appropriately be described as the commentator.

He felt so strongly about the implications of atomic discoveries and the developments made as a result of the war, that last August he started devoting one talk a week to this subject. Ever since then he has dealt exclusively with this problem on Friday evenings. Some of his observations interested Einstein so much that the latter wrote to him.

As a result Mr. Swing spent the better part of a day at Princeton University discussing the matter with Einstein. Before leaving he said he would like to write out a summary of Einstein's views. It is this summary, duly edited by the famous professor, which is published on this page to-day.

Their conversation, which started in the morning and lasted until well into the afternoon, was, I hear, conducted entirely in English. Mr. Swing remarks that Einstein's command of the language is now remarkably good.

## EINSTEIN FEELS ARMS RACE

### ATOM SECRET VITAL

From Our Own Correspondent  
NEW YORK, Monday.

Professor Einstein, in a comment to-day on his article in yesterday's DAILY TELEGRAPH on the atomic bomb—while it was published simultaneously in this country—emphasised that in the present situation nothing was more important than to create an atmosphere of confidence between the Great Powers, so that the problem of the abolition of competitive armaments could be solved.

"It is my belief," he said, "that to give away this secret under the present anarchic conditions would lead to an accelerated armament race. When I said that the so-called secret of the atomic bomb should not be thrown away, it was my intention to express sharply that everything—especially knowledge about the destructive weapons—should be used to bring about a centralised organisation for security."

The article itself has aroused great interest in the United States.

Enc List of papers sent by Leah Tully to State Dept  
Nov 9 '45

2. FDR to VB Oct 11 '41
3. Memo to FDR fr VB Oct 13 '41
4. FDR to WC letter Oct '41
5. Report of Nat Def Research Com June 27 '40 to June 28 '41
- ~~6. Secret memo~~
7. L B to R Mar 16 '42
8. M B to Rudolph Forster "
9. M R to B Mar 20
10. L B to R June 19
11. Memo R to B July 11

On June 29 R wrote to JRO similar letter  
July 9 JRO " " R & LRG.

Hopkins knew a great deal about the project from the beginning

B wrote to R re interchange discussions Aug 7 '43  
("no step either improper or unprovoked")

In letter of 4 Aug '43 Sir JA to Bush  
on interest Heads of Agreement + thanks

1 for info on possible use of radio-active material



In letter of 6 Aug 43      Sci SA & B

" it will not be for the CPC to interfere w/ the control of the Am program by the Corps of E of the US Army "

---

HHH      Box 24

B-  
4 scientists sent over before R. ~~Polo~~ CPC was organized - Who were they?

PM to Pres      Feb 27 '43      gave a complete history of project fr British viewpoint - (Very accurate)

Bush letter to H H      Mar 31 '43      gave all reasons discussed in MPC and between Conant and me re interchange. (A very able letter & one of which Bush can be very proud)





Please include in my notes  
Photostat of attached <sup>2 documents</sup> less addressee.

Again this would be a great convenience  
to me in my work - Not for quotation or  
really as source material but as a memory  
refresher. <sup>The Bush letter</sup> ~~It is~~ is a splendid exposition  
of our ~~2~~ views at that time.

The ~~Coar~~ Conant memo of Mar 25 '43  
falls into the same category. ~~Possibly~~ if  
for some reason the Bush letter should not be  
supplied me the Conant memo would still  
be of great assistance.

Please include in my notes

photostat of attached less heading and signature

Blank out first two TP's also 6<sup>th</sup> TP (in a letter dated - )  
on first page 7<sup>th</sup> TP

also on second page 3<sup>d</sup> TP (The President - - )

This would be a great convenience to me  
in my work - Not for quotation or ~~as~~ really as  
source material but as a memory refresher.  
and With a few small exceptions it is a  
splendid resume of the British thinking  
as expressed to me by Dr. Akers in  
Nov 42 and Jan 43.

MEMORANDUM

TO: Ambassador Winant  
FROM: Maurine Mulliner  
SUBJECT: Suggested Action in Connection with  
Mr. Atlee's Conference in Washington.

Do you think it would be helpful to Secretary Byrnes and his staff, in preparing the President for the conference with Prime Minister Atlee, if you sent him a memorandum listing the points on which discussion at this time might contribute to increased good will and understanding between the two governments, and to closer cooperation for world security and prosperity. The memorandum could be prepared from the suggestions put forward by your key staff members who are working on pending matters with the U.K. Government. You might also wish to include some broader matters concerning which a better understanding between the two governments is desirable.

Even though you may go to Washington for these discussions, I nevertheless believe such a memorandum would be the most useful if it were sent to the Secretary as early as feasible so the staff there could use it in making their preparations.

Here are some items which might be usefully discussed, providing the scope of the conference goes beyond that of the first one:

1. Development and control of atomic energy.
2. Method to be followed in developing peace treaties or settlements.
  - A. Continuation of Council of Foreign Ministers.
  - B. Seeking solutions through United Nations Organization within the framework of the Charter.
  - C. Calling a peace conference.

JOHN G. WINANT PAPERS, BOX 183, Ambassador to Great Britain, ATTLEE, C. R.

3. Basic relief for Europe this winter - understanding on government support for UNRRA and prompt implementation of that support.
4. Far Eastern Advisory Committee.
5. Financial and commercial arrangements between the two governments.
6. U.K., U.S. aviation arrangements.
7. U.K., U.S. adherence to the agreement to withdraw economic officials from Middle East.
8. Refuge for the Jews.
9. British brides of U.S. soldiers.
10. Expanding and facilitating exchange of students between U.K. and U.S. (A noncontroversial item like this would permit a pleasant, affirmative, and fundamentally constructive meeting of minds.)

Undoubtedly there are more important matters pending than many of those listed, which are known by the staff members handling them.

You could submit simply a list of the significant matters to the Secretary and say that you will be glad to furnish him a brief statement of the facts available here, or the thinking of this staff, on those matters which he would like to have expanded for possible use.

LONDON, October 31, 1945



FEB 1 1945

The original of this letter is with subsequent papers in the Truman Library.

It was for a time among the papers of James F. Byrnes

112 Mercer Street  
Princeton, New Jersey  
March 25, 1945

The Honorable Franklin Delano Roosevelt  
The President of the United States  
The White House  
Washington, D. C.

Sir:

I am writing you to introduce Dr. L. Szilard who proposes to submit to you certain considerations and recommendations. Unusual circumstances which I shall describe further below induce me to take this action in spite of the fact that I do not know the substance of the considerations and recommendations which Dr. Szilard proposes to submit to you.

In the summer of 1939 Dr. Szilard put before me his views concerning the potential importance of uranium for national defense. He was greatly disturbed by the potentialities involved and anxious that the United States Government be advised of them as soon as possible. Dr. Szilard, who is one of the discoverers of the neutron emission of uranium on which all present work on uranium is based, described to me a specific system which he devised and which he thought would make it possible to set up a chain reaction in unseparated uranium in the immediate future. Having known him for over twenty years both from his scientific work and personally, I have much confidence in his judgment and it was on the basis of his judgment as well as my own that I took the liberty to approach you in connection with this subject. You responded to my letter dated August 2, 1939 by the appointment of a committee under the chairmanship of Dr. Briggs and thus started the Government's activity in this field.

The terms of secrecy under which Dr. Szilard is working at present do not permit him to give me information about his work; however, I understand that he now is greatly concerned about the lack of adequate contact between scientists who are doing this work and those members of your Cabinet who are responsible for formulating policy. In the circumstances I consider it my duty to give Dr. Szilard this introduction and I wish to express the hope that you will be able to give his presentation of the case your personal attention.

Very truly yours,

*A. Einstein*

## Text of Roosevelt's Atomic Pact

LONDON, April 5 (Reuters).—Following is the text of the 1943 agreement between Prime Minister Churchill and President Roosevelt on the atomic bomb, as revealed by the Prime Minister today. Publication was approved by President Eisenhower, but the White House said the agreement was no longer in effect:

1. We will never use this agency against each other.

2. We will not use it against third parties without each other's consent.

3. We will not, either of us, communicate any information about Tube Alloys (the code name for atomic bombs) to third parties except by mutual consent.

4. In view of the heavy burden of production falling upon the United States as the result of a wise division of war effort, the British Government recognizes that any post-war advantages of an industrial or commercial character shall be dealt with as between the United States and Great Britain on terms to be specified by the President of the United States to the Prime Minister of Great Britain.

The Prime Minister expressly disclaims any interest in these industrial and commercial aspects beyond what may be considered by the President of the United States to be fair and just and in harmony with the economic welfare of the world.

5. The following arrangement shall be made to insure full and effective collaboration between the two countries in bringing the project to fruition:

A. There shall be set up in Washington a combined policy committee composed of: the Secretary of War (U. S.), Dr. V. Bush (U. S.), Dr. J. Conant (U. S.), Field Marshal Sir John Dill (United Kingdom), Col. J. J. Llewellyn (U. K.), C. D. Howe (Canada).

The functions of this committee, subject to the control of the respective governments, will be:

1. To agree from time to time upon the program of work to be carried out in the two countries.

2. To keep all sections of the project under constant review.

3. To allocate materials, apparatus and plant, in limited supply, in accordance with the requirements of the program agreed by the committee.

4. To settle any questions which may arise on the interpretation or application of this agreement.

B. There shall be complete interchange of information and ideas on all sections of the project between members of the policy committee and their immediate technical advisers.

C. In the field of scientific research and development there shall be full and effective interchange of information and ideas between those in the two countries engaged in the same sections of the field.

D. In the field of design, construction and operation of large-scale plants, interchange of information and ideas shall be regulated by such ad hoc arrangements as may, in each section of the field, appear to be necessary or desirable if the project is to be brought to fruition at the earliest moment. Such ad hoc arrangements shall be subject to the approval of the policy committee.



## DENMARK HOLDS GENERAL ELECTION TO-MORROW

### CHALLENGE TO SOCIALISTS

FROM OUR OWN CORRESPONDENT

COPENHAGEN, Sunday.

About 2,000,000 of the 2,300,000 Danes eligible to vote are expected to go to the polls in Denmark on Tuesday, when the country's first free general election since the spring of 1939 will be held.

An election held in 1943, when the country was still occupied, gave an undemocratic result, as the Communist party was banned by the Germans.

The Danes used the election vigorously to show the Germans that the Danish Nazi party had no followers.

After a record poll the National Socialists got only three seats and the Nazi-influenced Peasant party two. The present position of the Folketing, or House of Commons, is:

SOCIALISTS, 66; CONSERVATIVES, 31; LIBERALS (Farmers), 21; RADICAL LEFT, 13; UNION OF JUSTICE, TWO; DANISH UNITY PARTY, THREE; FARMER ISLANDS, ONE.

The three Nazi members are in gaol awaiting trial. The Peasant party's two members have renounced their seats.

#### CONSERVATIVE'S STAND

M. Møller, Foreign Minister, is standing for the Conservatives and has already made 55 election addresses.

The Communists and Socialists are fighting each other bitterly. There are no Resistance party candidates, but the movement is appealing to electors to vote for Resistance men who are standing for established parties.

The Danish Unity party is claiming to stand for the liberation movement, but its candidates are in a difficult position. A Government statement after the liberation that the German frontier would remain fixed is being attacked, especially by the Unity party, which wants to free South Schleswig from "German supremacy."

#### FRONTIER QUESTION

It seems that neither the Unity party nor any other seems ready to take responsibility for moving the frontier south.

It should be remembered that the Danish Socialists stand much to the right compared with the British Labour party or with the Norwegian Socialists.

It is generally expected that Denmark will get a Socialist minority Government, with Communist gains. It is unlikely that the Socialist Prime Minister, M. Buhl, will form a coalition with the Communists alone. Any coalition will comprise at least three parties, but it is not known whether the Conservatives would want to join.

#### LORD HINCHINGBROOKE

From Our Own Correspondent

WEYMOUTH, Sunday.

A vote of confidence in Viscount Hinchingbrooke, M.P., was passed by the Council of the South Dorset Conservative Association at Weymouth yesterday. The Council heard a statement by him on his recent speech at the opening of Thanksgiving Week at Swanage, when he was reported to have counselled rejection of any appeal by the Socialist Government for national savings to be used for nationalisation.

## AUTUMN SALON IN PARIS

### ARTISTS THE NAZIS COULD NOT COERCE

From T. W. EARP

PARIS, Sunday.

All Paris flows steadily through the doors of the autumn Salon, and though conversations on art inevitably end here in politics, even those that begin with politics can be diverted for a space to be Salon. It makes every Parisian an art critic.

This year's show, one gathers, is less exciting than last year's. That was a grand assertion of survival, while for revival we have still to wait. This is a Salon that marks time, yet it is notable for the display made by a band of veteran painters with Matisse at its head.

A room is devoted to his work past and present, and with its singing colour and gay arabesques of design the effect is wonderfully exhilarating. Bonnard shows three recent landscapes soaked in southern sunlight.

#### THE SENSATION

Marchand has two views of Algiers, serene in their classic sense of form, and Braque an interior which is a high peak of cubist achievement.

Like Picasso, who sends only two fine still-lives, these artists are loved for having resisted strong pressure to induce them to exhibit in Germany and in German-sponsored shows in Paris during the occupation.

They furnish the cachet of the present Salon, but since an autumn Salon has to have its sensation, this is found in Lorjou's "Le Metro," which brings visitors to a halt with angry protests or roars of laughter. It represents a huddle of passengers in the Paris Underground, and ruthlessly interprets the discomfort of that sadly overworked means of transit.

#### FORMIDABLE CUBISM

Much delicate work is shouted down by its neighbours, for the general tendency is a cubism of vociferous hue, derived without improvement from Picasso. When applied to surrealist subjects, the result is formidable. If there is no advance on pre-war endeavour, at least French art keeps a great store of energy at its disposal.

The sculpture is less startling than the painting, but in the manner of its showing the Salon scores heavily over similar mass-exhibitions in London.

## City of London By-election

### CONSERVATIVES CLOSE WATCH

#### MR. ASSHETON ON OPPOSITION ROLE

CANDIDATES

MR. RALPH ASSHETON (Cons.)

MR. A. S. COMYNS CARR, K.C. (Lib.)

Polling: Wednesday.

General Election (two seats): Mr. Andrew Duncan (Nat.), 5,332; Mr. George Broadbridge (Cons.), 5,309; Mr. Andrew McPadyean (Lib.), 1,487; Mr. S. W. Alexander (Ind.), 1,378; Conservative, 3,822.

#### DAILY TELEGRAPH REPORTER

In his address to electors in the City of London by-election caused by the elevation of Mr. George Broadbridge to the peerage, Mr. Assheton declares that only the Conservative party can provide a strong, virile, united opposition.

"If you elect me," he says, "I shall, in common with the rest of the Conservative Opposition, maintain a vigilant watch over Socialist encroachments on freedom and the rights of Parliament."

Of the problems confronting the country, first and foremost, he continues, comes the need to revive trade. "Unless individual initiative and enterprise—which have made the City of London the greatest city in the world—are allowed to develop, trade cannot revive."

He will make it his aim to urge the Government to tackle first the urgent, practical needs of the moment—to let the builders build and to let men and women return to civilian life.

"I want," he adds, "to see the Government putting first thing first, not making Socialist experiments. The times are too critical for that." He will also "press for further and substantial reduction in all forms of taxation."

The Empire must be maintained and developed and its capital, which has suffered so much devastation at the hands of the enemy, must be rebuilt.

## Bromley & Bournemouth

### WRITS RECEIVED

Writs were received in Bromley and Bournemouth during the week-end for the by-election caused by the elevation to the peerage of Sir Leonard Lyle (Cons. Bournemouth) and the death of Sir Edward Campbell (Cons. Bromley).

CANDIDATES: Bromley.—Mr. HAROLD MACMILLAN (Cons.), Major J. C. SAYE (Lab.) and Mr. ALEXANDER BAIN (Lab.). Bournemouth.—Mr. HARGREAVES BRACKEN (Cons.); Wing Cmdr. E. A. A. SHACKLETON (Lab.) and Mr. BASIL WOODEN (Lib.). Nominations, Nov. 8; polling, Nov. 15.

### ELECTORATE MUST THINK—THEN VOTE

#### MR. MORRISON'S CALL

Mr. MORRISON, Lord President of the Council, speaking at Birmingham last night, called on the British electorate to discharge the responsibilities of citizenship at the municipal elections on Thursday.

He added: "I ask them to vote for the candidates of their choice. That is my first request. Let them decide what sort of local authority they want and vote accordingly."

"Secondly, I ask them to vote for Labour, the name of the party of the people."

LONDON, April 5 (Reuters).—Following are excerpts from the speeches by Prime Minister Churchill and former Prime Minister Attlee in the House of Commons today:

### Prime Minister Churchill

We are all naturally concerned with the prodigious experiments which are being carried out in the Pacific, but I do not think that there will be any difference between us that we would rather have them carried out there than in Siberia.

I think we might reflect for one moment, at the beginning of this debate, on how we should feel in this House this afternoon if it were the Soviet Government instead of the United States Government which were carrying out this test series of hydrogen explosions and were circulating to the world films and photographs of what they look like.

Our present position is certainly not as bad as it would be if circumstances were altered as I have suggested.

### Won't Ask Halt in Tests

In fact, I believe that what has happened, what is happening and what is to happen in the near future in the Pacific Ocean increases the chances of world peace more than the chances of world war.

I also believe that we have time—though not too much time—to survey the problems which now confront us and the whole world and to talk them over in their new proportions, not only in public discussion but intimately and privately with our American friends and Allies. That, of course, is what we shall do and what we have been doing.

When saying this I must also repeat what I said last week. I shall not ask the United States Government to stop their series of experiments, which will go on throughout April.

After full consultation with our technical experts I can repeat the assurance which I gave that there is no foundation for the suggestion that these explosions are incalculable, in the sense that those making the tests are unable to set limits—even if not exact limits—to the explosive power of the bomb or to calculate in advance what the main effects will be.

We must realize that the gulf between the conventional high-explosive bomb in use at the end of the war with Germany on the one hand and the atomic bomb as used against Japan on the other is smaller than the gulf developing between that bomb and the hydrogen bomb.

That is now in large-scale production, I believe, in the United States. We also believe that to a less degree and possibly in a less potent form it is in large-scale production in Soviet Russia.

### Russians Got Early Start

Admiral Strauss tells us that the Russians were first to begin active and large-scale researches and work upon it.

The United States conducted this first full-scale experiment at Eniwetok atoll eighteen months ago. The first hydrogen explosion in Russia took place on Aug. 12, 1953, and its pressure waves were recorded and noted by instruments recording both to the United States and Britain.

According to the best intelligence that I have been able to acquire, the Soviets were well behind the United States even before the American explosion March 1 of this year. But on the other hand, they are much closer on the heels of the United States in the development of the hydrogen bomb than they ever were in the atomic bomb.

Turning to our relations in these matters with the United States, the United States Government are bound by their laws unless and until Congress alters them.

We have no agreement with them which entitles us to claim any form of joint authority. They are acting entirely within their rights as agreed between them and the late government. Whether we like it or not, that is the position which we found when we came into office two and a half years ago.

I do not really see why I should be blamed. When, after the election in 1945, I quitted the office of Prime Minister, which I had held during the war, our position was very different.

### Reveals Pact With Roosevelt

I feel that it will be in the national interest, and can do nothing but good on both sides of the Atlantic, if I now make public for the first time the agreement which I made in 1943 with President Roosevelt, which was signed by both of us in Quebec.

Mr. Eisenhower has informed me that he is content that I should do so. Here are the salient facts. I wrote them out myself those many years ago: "It is agreed between us, first, that we will never use this agency against each other."

That might even appear to have a jocular aspect, as we were all such close Allies, fighting, but it was meant to show that the agreement extended far beyond the limits of the war.

Secondly, that we will not use it against third parties without each other's consent.

Thirdly, that we will not, either of us, communicate any information about Tuba Alloys (that was the code name) to third parties except by mutual consent.

Fourthly, in view of the heavy burden of production falling upon the United States as a result of the wise division of the war effort, the British Government recognize that any post-war advantages of an industrial or commercial character shall be dealt with as between the United States and Great Britain on terms to be specified by the President of the United States to the Prime Minister of Great Britain.

That was how things stood when the Socialist Government came into office. Any changes that had taken place from that position in the interval are their responsibility or their misfortune, and not mine.

It can, of course, be said that in the fourth article of my agreement with President Roosevelt I abandoned all rights to the control of industrial and commercial nuclear power and left it entirely to the President of the United States.

He was to act in accordance with what he considered was fair and just and in accordance

with the welfare of the world, where as the Socialist Government regained these rights in return for sacrifices in the share of the control of the military aspect.

In 1951, when I was a private person, I asked President Truman to agree to the publication of the Quebec agreement because I was cross-examining Mr. Attlee, then Prime Minister, in the House upon the subject at that time. He appealed to me not to make such a request in public and, being in a private station, I deferred.

President Eisenhower, like his predecessor, is equally bound by the McMahon Act and the determination, evident up to the present, of Congress to maintain it. British representatives are bound by what happened in the time of the late Government. We have no means but friendly persuasion of inducing the Americans either to desist from their series of experiments, even if we desired them to, or to supply us with secret information about them, and generally in the atomic sphere we have no means of compelling them if their law forbids it.

The President is seeking from Congress more latitude in the application of the McMahon Act. I trust that nothing will be said in the House today which will arouse needless antagonism in Congress and throughout America.

### Warns Against Split With U. S.

Nothing could be more disastrous to peace than a grave dispute between Britain and the United States.

Yesterday, Mr. [Richard Crossman (a left-wing Socialist M. P.) in one of the Sunday papers wrote: "On Monday when the H-bomb will be debated Sir Winston must tell Mr. Eisenhower and Mr. Dulles that they can either scrap their new H-bomb strategy and join with Britain in the plan for high-level talks or else face the prospect of going it alone."

If that line of thought were adopted it seems almost certain that the agonizing reappraisal of which Mr. Dulles spoke in another connection would follow.

If the United States withdraws from Europe altogether she must withdraw from Europe altogether, and with her three-quarter circle of hydrogen bases already spread around the globe, she could face Russia alone, as she certainly would.

I cannot doubt that war in these circumstances would be nearer than it is today when the anxiety of the United States to their abiding honor is so largely centered upon the safety and freedom of Western Europe and the British Isles.

It is a delusion to suppose that a declaration of our neutrality would make us immune from danger from Russia. The very inferiority of Russia in atomic and hydrogen weapons would make it necessary for them to use to the utmost their enormous preponderance in conventional warfare. A simultaneous counter-attack on Western Europe would be the only form of immediate reprisal and of securing hostages, which the Soviet Government could take.

### Danger to British Isles

Although we still have the Channel the British Isles would be laid open to every conceivable form of air attack. These facts should surely be weighed by the House before lighthearted and lightheaded suggestions of challenging the United States "to go it alone" are given the slightest countenance.

I can repeat that we have full confidence in the humanity and sense of fair play of the United States and of their desire to maintain the close and friendly relations with us which are the foundation of our alliance and of the security of the free world.

It seems to me that with the Geneva conference impending at the end of this month we could hardly pick a more ill-chosen moment to propose a meeting of the heads of state and governments. I had certainly thought that we must see what happens there before attempting to use what is, after all, a very unusual reserve procedure.

It must also be remembered that the position of a President of the United States is intrinsically different from that either of Malenkov or me. We are only heads of governments. The President is the head of the state and he may well take a different view of his duties in time of peace to that of his predecessors in time of war.

When in May last year I suggested a personal and to some extent informal meeting on this character, the situation was different from that which exists today. Stalin had just died, and Malenkov had newly assumed the leadership in Russia. I thought it would be a good thing

if friendly personal relations could be established between leaders and if we could form a clearer view of what was then called the "new look." I am still in favor of that, but the topic has changed.

"As we go forward on our difficult road, we shall always be guided by two main aims of our policy. One is to lose no opportunity of convincing the Soviet leaders and, if we can reach them, the Russian people, that the democracies of the West have no aggressive designs on them. The other is to ensure that until that purpose has been achieved we have the strength necessary to deter any aggression by them and to ward it off if it should come.

We shall continue at the same time to seek by every means open to us an easement in international tension and a sure foundation on which the peoples of the world can live their lives in security and peace.

#### Mr. Attlee

I move this motion [for Churchill-Eisenhower-Malenkov talks] in no party spirit. I do

not seek any party advantage. Nor do I offer any criticism of this or any other Government. And I move it without any feeling of panic, because we do not panic in this country.

I move it because I believe there is need for a common and realistic appreciation of the position of the world today, and a realistic approach means that urgent action is necessary. We believe that civilization today is in grave danger.

It has been said that the bomb could have put out of action the metropolitan area of New York City and it is capable of being increased in size.

It could devastate the area of London and equally Moscow, Paris, Sydney or any other of the world's great cities.

We know that the United States has this weapon, we believe that the U. S. S. R. has it and in a few years it may be that many other states will have this weapon.

When I was in office the hydrogen bomb was considered as something in the remote future, but now it has come and there seems to be a constant anticipation of the times at

which we imagine these developments will take place.

We do not know what other developments may be in store for us. Our modern civilization expresses itself, particularly in the great cities, and they are targets of immense vulnerability.

The White Paper on defense envisaged atomic warfare and thereafter broken-back warfare.

I think warfare between sides armed with the hydrogen bomb will be succeeded by broken-back civilization.

Let us consider what is the effect of this invention. Does it make war more or less likely? I think that is a question which merits very close examination.

Since the U. S. S. R. got the atom bomb the force of that deterrent was lessened. There was the certainty of retaliation and what is more the possibility of anticipation.

#### Fear as a Deterrent

The more absolute the sanction the greater the reluctance to use it. Suppose an act of aggression took place say on the Burmese border, could one imagine the immediate use of the H-bomb against a capital city in another country.

It would amount to bluff, but the danger of bluff is that it might be called.

Therefore, I do not think that it will by itself prevent wars.

Indeed, there is a danger that people may chance making wars in the belief that this will not be used.

I cannot think of any democratic statesman initiating this warfare, but one must always remember the difference between the democracies and the authoritarian states. The advantage for unexpected, immediate action is always with the authoritarian states.

Who can doubt, after reading of Hitler's last days, that even at the very end of that war if he had had the atomic bomb he would have used it?

The danger here is that obviously in the use of this weapon there is an immense advantage to the side that gets its blow in first. It would be a terrible decision for any leader to take to launch this weapon.

We must remember that in the history of the Roman empire there were quite a number of lunatic emperors and we have only recently seen a great nation, Germany, putting all its resources into the hands of a paranoic.

There is no guarantee that in some country at some time, there may not arise to power a fanatic who hated the human race or believed that all civilization might be destroyed.

We are asking for high-level talks between the Prime Minister, Mr. Eisenhower and Mr. Malenkov to discuss not just the question of the hydrogen bomb

and of disarmament but to discuss the problem that faces the world in the existence of the hydrogen bomb.

What prospect is there of anything emerging? I believe the minds of people all over the world are disturbed at this H-bomb explosion.

I am sure that is true of the United States. It is true of this country and I sense from the recent note by Mr. Molotov that it is also felt in the U. S. S. R. I think this is a world-wide fear. I think it will grow and I think it should be encouraged to grow.

I want every man and woman in the world to be acutely aware of the danger they stand in, the danger that affronts civilization.

Reading of the great civilizations of the past we often say to ourselves "what fools those people were not to realize what would happen."

The Roman empire came down through the forces of the uncivilized world but the destructive force today is something we have made ourselves.

Russia is engaged in building up a social system and economy which we do not like and is not our way of life, but it is their concern. I am sure Malenkov and the rulers of Russia do not want to see their experiment blasted with H-bombs.

I am sure the ordinary view of the citizens of Russia, and I think of the leaders of Russia, is a feeling of the fear of what may happen.

The threat that we meet hangs over the democracies and the autocracies and unless there is some change I believe the danger of this happening is very real.

#### Calls on Understanding

The only way open to us seems to be to make a new approach to world problems with the consciousness of this great danger. Inevitably there must be compromise, but I think there must be a real effort to effect some understanding to live and let live.

The time has come to make the United Nations a reality.

I don't believe that time is on the side of the survival for civilization. I believe every month increases the danger. Great civilizations have gone down in ruins before. No doubt men thought: "Well, the worst won't happen; there is plenty of time. It will last our time." I believe that now is the time.

The common people all over the world are aware of their danger. We believe that such a meeting, backed by the desire of all men and women to be relieved of this fear, may make a turning-point in world history.

It is not too late.

More than once Britain's courage and initiative have saved Europe. British initiative may well save world civilization.

Excerpts

From Churchill and Attlee Hydrogen Bomb Talks



# Atomic Energy is Potential Boon but Actual Menace

## A WORLD GOVERNMENT REQUIRED NOW BEFORE U.S. MONOPOLY IS LOST

By Professor ALBERT EINSTEIN

*Prof. Einstein, the discoverer of the theory of relativity, went to the United States as a refugee from Germany in 1933 and became an American citizen in 1940.*

THE release of atomic energy has not created a new problem. It has merely made more urgent the necessity of solving an existing one. One could say that it has affected us quantitatively, not qualitatively. As long as there are sovereign nations possessing great power war is inevitable.

That statement is not an attempt to say when war will come, but only that it is sure to come. That fact was true before the atomic bomb was made. What has been changed is the destructiveness of war.

I do not believe that civilisation will be wiped out in a war fought with the atomic bomb. Perhaps two-thirds of the people of the earth might be killed, but enough men capable of thinking and enough books would be left to start again, and civilisation could be restored.

### Sharing the Secret

I do not believe that the secret of the bomb should be given to the United Nations Organisation. I do not believe that it should be given to the Soviet Union. Either course would be like the action of a man with capital who, wishing another man to work with him on some enterprise, should start out by simply giving his prospective partner half of his money. The second man might choose to start a rival enterprise when what was wanted was his co-operation.

The secret of the bomb should be committed to a World Government, and the United States should immediately announce its readiness to give it to a World Government. This Government should be founded by the United States, the Soviet Union and Great Britain—the only three Powers with great military strength.

All three of them should commit to this World Government all of their military strength. The fact that there are only three nations with great military power should make it easier rather than harder to establish such a Government.

### Gestures to Russia

Since the United States and Great Britain have the secret of the atomic bomb and the Soviet Union does not, they should invite the Soviet Union to prepare and present the first draft of a Constitution for the proposed World Government. That action should help to dispel the distrust which the Russians already feel because the bomb is being kept a secret, chiefly to prevent them having it. Obviously the first draft would not be the final one, but the Russians should be made to feel that the World Government would assure them their security.

It would be wise if this Constitution were reported by a single American, a single Britisher and a single Russian. They would have to have advisers, but these advisers should only advise when asked. I believe three men can succeed in writing a workable Constitution acceptable to all three nations. Six or seven men or more probably would fail.

After the three Great Powers have drafted a Constitution and adopted it, the smaller nations should be invited to join the World Government. They should be free to stay out, and though they would be perfectly secure in staying out, I am sure they would wish to join. Naturally they should be entitled to propose changes in the Constitution as drafted by the Big Three. But the Big Three should go ahead and organise the World Government whether the smaller nations join or not.

The World Government would have

power over all military matters and need have only one further power: the power to intervene in countries where a minority is oppressing a majority and creating instability that leads to war. Conditions such as exist in Argentina and Spain should be dealt with. There must be an end to the concept of non-intervention, for to end it is part of keeping the peace.

The establishment of the World Government must not have to wait until the same conditions of freedom are to be found in all three of the Great Powers. While it is true that in the Soviet Union the minority rules, I do not consider that internal conditions there are of themselves a threat to world peace.

One must bear in mind that the people in Russia did not have a long political education, and changes to improve Russian conditions had to be carried through by a minority for the reason that there was no majority capable of doing it. If I had been born a Russian I believe I could have adjusted myself to this condition.

It is not necessary in establishing a world organisation with a monopoly of military authority to change the structure of the three Great Powers. It would be for the three individuals who draft the Constitution to devise ways for their different structures to be fitted together for collaboration. Do I fear the tyranny of a World Government? Of course I do. But I fear still more the coming of another war or wars. Any Government is certain to be evil to some extent. But a World Government is preferable to the far greater evil of wars, particularly with their intensified destructiveness.

### For No Selfish Reason

If a World Government is not established by agreement, I believe it will come in another way and in a much more dangerous form. For war or wars will end in one Power being supreme and dominating the rest of the world by its overwhelming military strength.

Now that we have the atomic secret we must not lose it, and that is what we should risk doing if we should give it to the United Nations Organisation or to the Soviet Union. But we must make it clear as quickly as possible that we are not keeping the bomb a secret for the sake of our power but in the hope of establishing peace in a World Government, and that we will do our utmost to bring this World Government into being.

I appreciate that there are persons who favour a gradual approach to World Government even though they approve of it as the ultimate objective. The trouble about taking little steps one at a time in the hope of reaching that ultimate goal is that while they are being taken we continue to keep the bomb secret without making our reason convincing to those who do not have the secret. That itself creates fear and suspicion, with the consequence that the relations of rival sovereignties deteriorate dangerously.

### Not a Question of Money

So while persons who take only a step at a time may think they are approaching world peace they actually are contributing by their slow pace to the coming of war. We have no time to spend in this way. If war is to be averted it must be done quickly. The United States will not have the secret very long. I know it is argued that no other country has money enough to spend on the development of the atomic bomb, and that this fact assures us in the Constitution as drafted by the Big Three. But the Big Three should mistake often made in the United States to measure things by the amount of money they cost. But other countries which have the materials and the men can apply

them to the work of developing atomic power if they care to do so. For men and materials and the decision to use them, and not money, are all that is needed.

I do not consider myself the father of the release of atomic energy. My part in it was quite indirect. I did not in fact foresee that it would be released in my time. I believed only that release was theoretically possible.

It became practical, through the accidental discovery of chain reactions, and this was not something I could have predicted. It was discovered by Hahn in Berlin, and he himself misinterpreted what he discovered. It was Lise Meitner who provided the correct interpretation, and escaped from Germany to place the information in the hands of Niels Bohr.

I do not believe that a great era of atomic science is to be assured by organising sciences in the way large corporations are organised. One can organise to apply a discovery already made, but not to make one.

Only a free individual can make a discovery. There can be a kind of organising by which scientists are assured their freedom and proper conditions of work. Professors of science in universities, for instance, should be relieved of some of their teaching so as to have time for more research. Can you imagine an organisation of scientists making the discoveries of Charles Darwin?

### State Property

Nor do I believe that the vast private corporations of the United States are suitable to the needs of these times. If a visitor should come to the United States from another planet would he not find it strange that in this country so much power is given to private corporations without their having commensurate responsibility?

I say this to stress that the American Government must keep the control of atomic energy, not because Socialism is necessarily desirable, but because atomic energy was developed by the Government, and it would be unthinkable to turn over this property of the people to any individual or group of individuals.

As to Socialism, unless it is international to the extent of producing World Government which controls all military power, it might more easily lead to wars than does capitalism, because it represents a still greater concentration of powers.

To give any estimate of when atomic energy can be applied to constructive purposes is impossible. What now is known is only how to use a fairly large quantity of uranium. The use of quantities sufficiently small to operate, say, a car or an aeroplane is as yet impossible. No doubt it will be achieved, but nobody can say when.

### The Scarce Elements

Nor can one predict when materials more common than uranium can be used to supply atomic energy. Presumably all materials used for this purpose will be among the heavier elements of high atomic weight.

Those elements are relatively scarce because of their lesser stability. Most of these materials may already have disappeared by radioactive disintegration. So though the release of atomic energy can be and no doubt will be a great boon to mankind, that may not be for some time.

I myself do not have the gift of explanation by which to persuade a large number of people of the urgencies of the problems the human race now faces. Hence I should like to commend someone who has this gift of explanation—Emery Reyes, whose book, "The Anatomy of Peace," is intelligent, brief, clear and, if I may use the abused term, dynamic on the topic of war and the need for World Government.

Since I do not foresee the atomic energy to be a great boon for a long time, I have to say that for the present it is a menace. Perhaps it is well that it should be. It may intimidate the human race into bringing order into its international affairs which without the pressure of fear it would not do.

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From

HOPKINS PAPERS, ATOMIC BOMB FILE, Box 132

From the Office of  
V. BUSH

*Five Tube Alarm*  
Mr. Harry Hopkins.

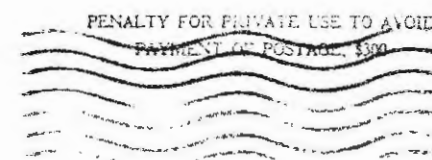
The attached clipping shows  
what can happen when  
control is loose and  
security insufficient.  
It gives sufficient basis  
in itself for instance  
that knowledge be passed  
only to those who really  
need it.

Perhaps you will wish  
to ask "how come"

AB5

V. Bush

OFFICE FOR EMERGENCY MANAGEMENT  
OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT  
1530 P STREET NW.  
WASHINGTON, D. C.



Mr. Harry Hopkins,  
The White House,  
Washington, D.C.

HOPKINS PAPERS, ATOMIC BOMB FILE, BOX 132



## NAZI 'HEAVY WATER' LOOMS AS WEAPON

Plant Razed by 'Saboteurs' in  
Norway Viewed as Source  
of New Atomic Power

AMERICAN FORMULA USED

Super-Explosive Indicated—  
British Counter-Action Seen  
in Paratroop Activity

Special Cable to The New York Times

LONDON, April 3.—"Heavy water," derived by an electrochemical process from ordinary water, with hidden atomic power that can be used for the deadly purposes of war as well as the happier pursuits of peace, apparently has become a source of anxiety for those Allied leaders who plan attacks against enemy targets.

Reports reaching Norwegian circles in London cite German sources as having announced on Wednesday that as a result of the work of "saboteurs," a big electrochemical plant at Rjukan, Norway, had been blown up in what is said to have been one of three recent raids against that enemy-occupied country.

The importance of Rjukan as a target for destruction is that it is a huge plant on a wild river, from the waters of which queer chemical known as "heavy water," the discovery of which won a Nobel Prize in 1934 for Professor Harold Urey of Columbia University, is produced, and it can be used in the manufacture of terrifically high explosives.

Use in Explosives Seen

Heavy water or, more correctly, heavy hydrogen water, is believed to provide a means of disintegrating the atom that would thereby release a devastating power. While it is not believed here that the Germans, even with all their expert chemical knowledge, have developed some fantastic method of hurling the shattering force of split atoms at Britain, it is known that heavy water, when added to other chemicals, gives a powerfully destructive force, just as it can help in the production of new types of gasoline, new sugars, new textiles and numerous other utilitarian as well as medical developments.

Consequently, Norwegians living in London studied with interest the report emanating from Stockholm Wednesday that Rjukan had been so heavily attacked by "saboteurs" that the Germans had declared a state of emergency. They considered that if the plant had been destroyed the Germans had suffered a severe loss in their output of ammunition.

At Rjukan one quart of heavy water can be produced from 6,000 gallons of ordinary water by an electrochemical process, the formula for which was given to the world by American scientists.

Rjukan is just south of a 3,500-square-mile area in a barren mountain plateau region known as "Trilangervidda," which the Germans shut off to all civilians April 1. Recent German reports have that R. A. F. transport planes and gliders have dropped paratroopers around that area.

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DECLASSIFIED

E.O. 11652, Sec. 5(E)(2)  
Justice Dept. letter, 9-21-72  
By DBS, NLR, Date AUG 9 1975

*only to President*

February 9, 1945

~~SECRET~~  
PERSONAL AND ~~CONFIDENTIAL~~  
BY SPECIAL MESSENGER

Honorable Harry L. Hopkins  
The White House  
Washington, D. C.

Dear Harry:

As you are well aware, the Army for the past two years has been vitally interested in a highly secret project for the development of an atomic explosive. This explosive, as you know, involves the release of energy through the shattering of atoms of heavy elements.

During the period that the Army has been engaged in the supervision of this experimentation, numerous efforts have been made by the Soviets to obtain the highly secret information concerning the experimentation and this Bureau has been actively following such Soviet efforts.

The German Government has also been interested in the same type of experimentation in Germany and has attempted to get information regarding the atomic experimentation in the United States.

Recently, in connection with the operation of a radio station by a German agent under control of the Federal Bureau of Investigation but which station the Germans believe to be a free station, an inquiry was received from Germany containing the following questions regarding the status of atomic explosive experimentation in the United States:

First, where is heavy water being produced? In what quantities?  
What method? Who are users?

Second, in what Laboratories is work being carried on with large quantities of uranium? Did accidents happen there? What does the protection against Neutronic Rays consist of in these Laboratories? What is the material and the strength of coating?

Third, is anything known concerning the production of bodies or molecules out of metallic uranium rods, tubes, plates? Are these bodies provided with coverings for protection? Of what do these coverings consist?

We have already advised the appropriate authorities in the War Department concerning these German inquiries.

I thought the foregoing would be of considerable interest to the President.

With best wishes and kind regards,

Sincerely yours,

# REMINISCENCES OF LOS ALAMOS

1943—1945

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GEORGE B. KISTIAKOWSKY

#### REMINISCENCES OF WARTIME LOS ALAMOS

To refresh my memory about Los Alamos I read a couple of books on the wartime period but got confused and irritated because they certainly didn't jibe with my recollections. Everything in books looks so simple, so easy, and everybody was friends with everybody. But even more annoying was that none of my young associates, who did most of the work, were even mentioned. So I got in touch with people who were there and who are now in the vicinity of Boston, and did some telephoning to my former associates in other cities. In a way, what follows is a group recollection, but I take full responsibility for it.

Before coming to Los Alamos I was probably the senior expert in the whole explosives division of the National Defense Research Committee (NDRC). I began research on explosives in June 1940 (when NDRC was organized) and by 1943 thought I knew something about them. I was also involved in a National Academy of Sciences committee late in 1941, which advised President Roosevelt that the atom bomb was feasible.

The man who deserves full credit for developing the concept of implosion, necessary to explode a plutonium weapon, is S. Neddermeyer. He and his assistant visited our NDRC Explosives Research Laboratory in Bruceton, near Pittsburgh, in the summer of 1943. We made the first implosion charges for them, fired them off, and the visitors went away rather pleased with themselves and with us. The reason that I went to Los Alamos was that James B. Conant, who was chairman of NDRC and knew my views on military high explosives (that they could be made into precision instruments, a view which was very different from that of military ordnance), was also the effective policy maker of the Manhattan District, as the co-chairman of the so-called military policy committee guiding General Groves. I began going to Los Alamos as a consultant in the Fall of 1943, and then pressure was put on me by Oppenheimer and General Groves and particularly Conant, which really mattered, to go there on full time. I didn't want to, partly because I didn't think the bomb would be ready in time and I was interested in helping to win the war. I also had what looked like an awfully interesting overseas assignment all fixed up for myself. Well, instead, unwillingly, I went to Los Alamos. That gave me a wonderful opportunity to act

as a reluctant bride throughout the life of the project, which helped at times.

After going there on full time at the end of January 1944, I brought there from the explosives division of the NDRC quite a few people, who became the key operators in the implosion project: Linschitz, Koski, Kauzmann, Hornig, Jackson, Patapoff and others, later Roy. I found a very small operation under Neddermeyer — only a few people working — and a continuing angry conflict between Neddermeyer, who is now a professor at the University of Washington, and his boss, Captain Parsons, later Admiral Parsons, now unfortunately dead, who was the head of the Ordnance Division. I was put in the middle, between them by Oppenheimer, and that was a very uncomfortable place. So uncomfortable that two or three months later I wrote a memo to Oppenheimer, asking to be released from the project. That didn't work and instead I got a more authoritative job.

By the summer of 1944 I was supposedly the boss of all the implosion work, but, as I was still under Parsons, the conflicts continued. Theoretically, the official channel of communications was from Neddermeyer to me, to Parsons, to Oppenheimer. Well, it didn't work that way. Basically, Neddermeyer believed that the implosion research should be done by a small group, in a consecutive set of experiments until the right way of doing it was achieved. Now, I don't know whether you know what implosion is. We ended with a spherical charge of high explosives, almost five feet in diameter with a metallic pit in the middle. In the center of the pit was the plutonium fissionable material. Our job was to induce the pit and the plutonium to be compressed in an orderly fashion under the extreme pressure of a detonation wave, many millions of pounds per square inch, into something very much smaller than it normally was, whereupon it would become supercritical. A nuclear reaction would then spread and a big bang follow. Neddermeyer believed that this had to be discovered in a scientific, orderly fashion. Captain Parsons was a Navy ordnance officer, accustomed to developing mass products, and therefore felt very differently about how the work should be done. Soon after I arrived Captain Parsons brought to Los Alamos a Mr. Busby, an old Navy ordnance civilian to be in charge of explosives manufacture. And so the issue very soon became who, Busby or Kisty, [i.e., Kistiakowsky] knew more about explosives. Busby was a little difficult because when you disagreed with him about what was safe and what was unsafe, he would say "and have you ever picked up a man on a shovel?" So Mr. Busby designed and had built the first explosives casting plant. It was a monstrosity from our point of view. Actually, what he had built in the spring of 1944 was never used afterwards.

Then came the summer of 1944. I insisted that we build another plant

according to our concepts and proposed a completely new site for it, in Pajarito Canyon. Captain Parsons rejected that and insisted that the existing S-site be expanded and that's where the plant went. But it was built according to our designs, and it worked. One of the reasons I didn't like the S-site was that to get the raw explosives there they had to be trucked all the way over the mesa, right through the center of the Los Alamos project, with the whole theoretical division sitting in offices on one side of the road, Oppenheimer's office (and mine) on the other, and with hundreds of wild WAACs and GIs driving trucks and jeeps there. I can assure you that a truck loaded with five tons of high explosive (H.E.) going off there would have wiped out 90% of the brains in those temporary buildings. The roads leading from the main project to the S-site, which was a few miles south of there, were dangerously rough. Once, so an apocryphal story goes, when General Groves visited Los Alamos, I took him to the S-site in my jeep that had the springs made inoperative by wooden blocks inserted under them. General Groves was rather rotund in shape. As a result of that trip the roads over which H.E. were moved were improved.

We had developed in NDRC complete different notions from those of the Ordnance Corps about what was dangerous and what was safe in handling high explosives. At Los Alamos we handled them by the ton, whereas one gram of explosive going off in your hand will finish off the whole hand. By the end of the war we had cast and machined, following our rules of safety, tens of thousands of H.E. castings without a single accident. And we did it without barricades, which are required by ordnance rules. There was no time to build barricades. So we just worked. The S-site was managed by the Army Captain Jerry Ackerman, a civil engineer before the war, with a few very young Navy lieutenants and ensigns, like Hopper, Wilder, Chapell and a large number of GIs, who were called SEDs (Special Engineer Detachment), doing most of the work. Also there were quite a few civilians such as Price and Gurinsky, who were mostly in a development section, to find how to cast these explosive slurries. They were mixtures of explosives, a so-called Composition B and another explosive, Baratol, which we had developed at the Bruceton (Pittsburgh) NDRC Explosives Laboratory, and which was used for lenses. Up to 25 tons of H.E. was trucked up the hill monthly during the most active period. The manufacture of the H.E. charges was really hard, tough and dirty work. A lot of people thought it was also very dangerous and because of that I went to S-site very frequently and tried out new operations simply to show confidence in what we were preaching.

One of the very important contributors to our success was Master Sergeant



Tenney, in peacetime a doctor of physics, who developed non-destructive X-ray inspection of castings. Until the middle of 1944 all we could do was to cut a casting with a saw to see whether it was homogeneous or had bubbles and cracks. Gradually Jerry Tenney's project grew into a mammoth operation with million volt X-ray and gamma ray sources to inspect all the castings.

The implosion experimentation involved exploding the castings and trying to find out whether they did what we hoped they would do to the metal inside. It was originally carried on by Neddermeyer, Greisen, Lynch, Kauffman, and an increasing number of SED assistants. What became more and more clear was that if an explosive charge was detonated simultaneously from several points then trouble developed. Remember that detonation waves are like acoustic waves, more or less, but they develop enormous pressures and travel through the explosive at a speed of seven to eight thousand meters per second (five miles per second). At the point where two detonation waves meet, a metal core is squeezed into a high velocity jet and complete chaos develops. In other words, this sort of thing makes implosion impossible. To solve that trouble, first Linschütz, then Koski, then Jim Tuck, a member of the British technical mission who was sharing in our work, began experiments with explosive lenses. I won't go into details except to say that the principle on which these lenses is based is just like that of the optical lenses, where you have two media of different refractive index, such as air and glass, and therefore a different velocity of light in each. If you have two explosives with different detonation velocities, and you put them together in the right way you can shape the wave, and instead of having it expand, make it to converge. It's not simple, but it can be done. And I arranged with the Bruceton NDRC laboratory, particularly with Drs. MacDougall and Eyster, to develop an explosive, Baratol, for the slower component of the lens.

There is an interesting story about Baratol. Lord Cherwell, who was originally professor of physics Lindemann at Oxford, and was the science advisor to Winston Churchill, came to Los Alamos in 1944. He had been a very kind and helpful host when I spent part of the spring and summer of 1941 in England learning about explosives technology from the British. He was very considerate then and took me to his 'private' explosives research laboratories. His staff there was developing trick things for the British commandos. Very interesting ideas. Well, so he fancied himself as an explosives expert. I was trying to be extra polite, so I took him around Los Alamos and gave him absolutely the whole story. He listened to me and told me that Baratol was going to be no good for the lenses, that I should use commercial dynamite. I explained to him why, on theoretical grounds, dynamite couldn't

work and we parted friends. A little later Oppenheimer called me in to tell me about Churchill's personal cable to Roosevelt saying that certain people, specifically Kistiakowsky at Los Alamos, are barking up the wrong tree, since Baratol is not going to work, and that they should use dynamite. I suggested to Oppenheimer that he could tell the sender to go to hell. Naturally it ended by my agreeing to set up a group to study dynamite lenses. So I went through a rather large X (Explosives) Division personnel list, singled out individuals who hadn't contributed anything, constituted a group out of them, and so dynamite didn't delay the project in the slightest.

Because of organizational difficulties and the growing importance of implosion, in July and August 1944 there was a big reorganization. Parsons continued to head the Ordnance Division but two new divisions were created, X and G. I ran the X, which did the high explosive charges development work and the experiments with the already developed observational methods on implosion dynamics, also lens development, and some other tasks. We ran this division in a very democratic fashion, with frequent meetings for discussing the results of what we had done, scheduling new experiments, scheduling and allocating the output from the S-site and so on. Unfortunately, my young associates like Linschütz, Koski, Kauzmann, Tenney, and others were regarded, high above, as too young to be made into group leaders because then they would be on a par with people like Edwin McMillan, Luis Alvarez, and Edward Teller. So they were made into section leaders, and Commander Norris Bradbury, professor of physics at Stanford, was brought in August from the Dahlgren Naval Proving Grounds to head group X-1, which was comprised of about five sections headed by these youngsters. They operated the sections in a pretty autonomous fashion because each had his own experimental site for safety reasons -- maybe as much as a mile apart. And the sites were fairly self-contained, perhaps even possessing a lathe, a few draftsmen and so on.

The G (Gadget Physics) Division, Robert Bacher being put in charge of it, undertook to develop new experimental methods of observing the movements of the pit after being struck by the detonation wave, and also to design the pit, including of course the plutonium sphere. I might add that this reorganization was partly due to the theoretical conclusion that implosion was the only way in which an effective plutonium bomb could be made. I welcomed this separation of functions because by then the total implosion staff became much too difficult to manage. But in a few months' time our relations with the G Division became not very happy because the G groups put tremendous demands on the S-site to provide them with tricky explosives castings, which

the S-site simply could not meet without stopping supplies for the X Division experiments and interfering with its own development of better casting methods. So we as a group began to feel that the G Division was merely delaying the progress of the implosion project by working on such complex experimental methods that they would never yield anything useful in time. I must admit that G Division people didn't share our views. Since Bob Bacher is not a shrinking violet, he and I had some very heated arguments. Oppenheimer, I think, backed him more than me — maybe Bob Bacher has a different view — and so Oppie even brought Charles Lauritsen from Cal Tech to Los Alamos to help the X Division as his, Oppenheimer's, personal assistant. That added to my troubles, because the key source of delay in providing more castings was that we couldn't get enough molds in which to make castings. These molds were really precision devices because the shapes into which explosives had to be cast were such that we could not machine rough shaped castings with the tools available to us at the S-site. They had to be cast into precise shapes. Some were not small. For instance, full sized castings weighed up to 100 pounds or so. Some X Division people, especially Bob Henderson and Earl Long, were of tremendous help in providing precision molds. Gradually huge machine shops were created at Los Alamos for this and other purposes — more than 500 machinists and toolmakers were working there at one time.

I think that certainly not the least factor in our success was Master Sergeant Fitzpatrick (SED), our X Division procurement and scrounging wizard. We learned early in the game that if we followed the rules of the Manhattan District, we wouldn't get anywhere. The slow facility construction and procurement delays, and the shortages of various materials were really a painful problem. When Charlie Lauritsen came to Los Alamos he was critical of our procurement efforts. So Charlie said that his Cal Tech Navy rocket project staff will solve our molds problem; but they didn't in time, and so the spring of 1945 was very short on molds and very rich in recriminations.

By late 1944 so much pessimism was developing about our ability to build satisfactory lenses that Captain Parsons began urging (and he was not alone in this) that we give up lenses completely and try somehow to patch up the non-lens type of implosion. So, in early 1945 we had a top-level meeting with General Groves present in which a kind of battle royal was fought, in a friendly way, between Parsons and me because I felt that we couldn't patch implosion without lenses and he felt we couldn't make the lenses. Oppenheimer in the end decided for the lenses and that was that.

In the early days of the implosion project, to get detonation started all over a sphere of explosives there was one electric detonator firing a branching

circuit of Primacord. Primacord is a rope-like detonating fuse which transmits the detonation wave at a speed of some three miles per second. The ends of this circuit were embedded at appropriate points in the explosive charge. The use of multiple electric detonators, or blasting caps, was objected to by Parsons' Ordnance Division because the Army-Navy rules require that there be a mechanical 'gate,' that is a piece of metal, between a detonator and the main explosive charge which has to be withdrawn before firing. For instance, in an artillery shell, the 'gate' is withdrawn by centrifugal force after the spinning shell leaves the muzzle of the gun. This makes the shell safer to handle before firing, because detonators are dangerously sensitive to impact and heat. To install as many such gates as would be necessary in the implosion device was just an engineering nightmare. Furthermore, the electric detonators then in existence had horribly poor timing, so that to explode them simultaneously looked, to us at least, absolutely impossible. Mind you, since detonation waves travel almost a centimeter per micro-second, the timing we were concerned about were fractions of a millionth of a second. We did a lot of experimenting with Primacord ordered in fancy, expensive, special batches. Lt. Shafer did most of this work. The Primacord just wasn't good enough.

Luis Alvarez in the summer of 1944 started experimenting with electric detonators and, I must say, completely to my surprise, found a way of setting them off in such a way that the simultaneity was very acceptable. Then new detonators were so designed by Alvarez, with my help, that we were able to persuade Captain Parsons to drop the requirement of 'mechanical gates.' So we abandoned Primacord. Then Bainbridge, Fussell, and Hornig in our division began work on what we called the X unit, an electric device to fire these new detonators simultaneously. Alvarez moved to other problems in the G Division, Bainbridge went to head the Alamogordo or Trinity test site, and Greisen in our division took over the detonators in the spring of 1945. That turned out to be a very nasty and unfinished problem because we couldn't get reproducibility with the Alvarez detonators. Most of them worked fine, but since one had to have many for each implosion, and even the failure of one could be a catastrophic failure, even doubling the circuit didn't give adequate assurance. So Kauzmann and Jackson did a very clever piece of physico-chemical research on the explosive charge in the detonators and found a way of making them reproducible.

To test or not to test the plutonium bomb was a very hot issue in the fall of 1944. Oppenheimer and I were pleading with General Groves that there had to be a test because the whole scheme was so uncertain. But General

Groves said he couldn't afford to lose all that plutonium if the chemical explosive went off but there were no nuclear explosion. General Groves was very sensitive about what would happen to him after the war and whenever he didn't like something, he'd say, "Think of me standing before a U. S. Senate committee after the war when it asks me: 'General Groves, why did you spend *this* million or *that* million of dollars?' " Well, it was difficult to answer that, too. So we proposed to test the bomb in a confining vessel, and a couple of very bright engineers in our division, Carlson and Henderson, designed Jumbo, a 200 ton ellipsoidal steel tank, with wall thickness nearly twelve inches, in the center of which, they believed, several tons of high explosive could be exploded and, if there were no nuclear reaction, everything would stay inside, although the vessel would stretch out quite a bit. And so plutonium could be recovered after everything cooled down. In the spring of 1945, Jumbo was delivered to the Trinity test site, but by then more plutonium was coming off the production line and we felt much more confident of implosion. So Jumbo was set up just half a mile away from the Trinity tower, and never used.

By the way, a sad story about Jumbo. Groves was very sensitive about Jumbo and kept accusing me personally about it. Once he said to me, "Now you are responsible for Jumbo, and it is not being used, so what am I going to tell to the Senate? Look here, we got that cyclotron from Harvard for Los Alamos. How about you convincing Conant that when he goes back to the presidency of Harvard he should accept Jumbo in trade for the cyclotron at Los Alamos?" Actually Jumbo had a very sad end after the war. In the fall of 1945 Groves suddenly remembered that ghastly thing and told his aide-de-camp to arrange for a test, so at least he would be able to tell the Senate committee that the thing had been used. Well, you know the way it is in the Army. The orders filtered down, down from Washington to Albuquerque, Albuquerque to White Sands Proving Grounds, and so on. It ended with some poor lieutenant taking a box of high explosive and instead of suspending it in the center of Jumbo, putting it on the bottom of Jumbo and firing it. Naturally, the high explosive knocked out a nice clean hole in Jumbo, so that was the end of the matter. The U.S. Senate never caught on to the Jumbo extravaganza and its battered remains are still there, half buried near the Trinity site.

The Special Engineering Detachment (SED) was very important. General Groves insisted that, in distinction to technical staff civilians, most of whom lived quite comfortably in a highly hierarchically organized society, the enlisted personnel be given only what the Army regulations stipulated as the minimum comforts: minimum housing, minimum recreation, minimum food

facilities. And this meant 40 square feet per man in the barracks, including part of the recreation area. Try to recreate yourself in that area. So the poor SEDs, of whom we had more than a thousand at the end of the war, really felt themselves the pariahs of Los Alamos. And moreover the commanding officer of the SED detachment was a South Bostonian. You must have read a little about South Boston in the Fall of 1974 when the Boston schools opened. Well, he was a true South Bostonian and besides he had been wounded in the heel, in fact the back of the heel, on the first day of Eisenhower's African landing. As a result, he simply hated the world, and especially the longhaired scientists, notably those from Harvard. Since he was not told, as many other military weren't (nor the machinists, of course), what the purpose of Los Alamos was, he loudly described all of us as draft dodgers who were just escaping Army service and having fun here. He insisted that the SEDs be awakened by a reveille and be mustered daily and do calisthenics and keep the barracks in order and even wear caps and salute officers on the streets. These were insulting ideas to most of the SEDs. Since my division had the most SEDs and we had very good relations, there finally came to me an SED delegation who said they were going to complain to the War Department unless that officer was removed. I said, "look, this is mutiny in war time - don't," but they said "then do something about it." So I naturally went to Oppenheimer and he, not for the first time, argued with General Groves - to absolutely no avail. Later, when Groves came again to Los Alamos I asked permission to talk to him. He said, "yes, while I am being driven back to Albuquerque." So after midnight I got into his car and we went on that 2½ hour trip to Albuquerque and argued about SED. Of course Groves immediately told me that as a civilian I had no business to tell him anything about Army matters. And I said that the SEDs were part of my technical staff, they had to report to me, they had to work for me, and therefore I had the authority. Well, I got absolutely nowhere. I then used my ultimate weapon: I said I would resign. Still seemingly no effect. Well, I didn't have time to resign, because in a little while the South Bostonian became the Manager of the Officer's Mess and the SED got a new commanding officer, a very nice tall Texan, who made absolutely no disciplinary demands and spent most of his time drinking in the company of a very cute WAAC. Eventually both slid with their jeep down a canyon-side, but that was after the war. And they didn't get hurt, they were so relaxed.

The Trinity test was the climax of our work. The site is 200 miles south of Los Alamos in a part of a bombing range called Jornada del Muerto desert, not very near Alamogordo, but in that region. The G Division and Oppenheimer insisted that a perfect replica of the charge to be exploded at the

Trinity test be fired at Los Alamos using the so-called magnetic method observation technique. We were desperately short of adequate H.E. castings. A few days, maybe a week, before the test, after borrowing an electric dentist's drill, I spent most of a night drilling holes in imperfect castings where Sergeant Tenney had discovered bubbles of air. I reached the bubbles and then poured molten explosives into these channels to fill the bubbles and drill holes and in that way make the castings better, because we knew that when there were bubbles the detonation wave became distorted. Just like the bubbles in an optical lens, or scratches do. In that way we repaired enough castings so that the two assemblies, each weighing several tons, were assembled, with Norris Bradbury in charge of this particular job.

The assembly to be fired at Trinity had to be trucked through Santa Fe and Albuquerque and a lot of people outside the X Division thought that these assemblies were far more dangerous than ordinary iron aircraft bombs, which they really weren't at all. So I rather vividly remember that I got on a truck with a loaded assembly and drove it around the Los Alamos roads which were certainly worse than any roads we would encounter on the trip to the Alamogordo site, just to show that nothing would happen. A few minutes past midnight on Friday the 13th, my choice, because I believed in unorthodox luck, Bradbury and I took the assembly in a convoy to the Trinity site.

Bainbridge had been in charge of planning and then developing the Trinity test site since 1944. But in 1945, as this project expanded and became more and more tense, he was separated from the X Division and became the head of a new TR Division. This grew of course to a very large size, because so many experiments and observations were being readied for and at the Trinity site. Hornig, about July 10, 1945, (six days before actual test), took several X units to Trinity because various observational instruments had to be triggered by the firing of the X unit for simultaneity. And so they had to use the X unit to assure synchronization. A day or two later there came a violent storm and the X unit being used fired prematurely by itself. Well, a human storm followed over Hornig's head for incompetent design because people unimagined this happening when it was connected to the bomb. Until, that is, Hornig discovered that the grounding wire was pulled off or busted or something and the X unit got a huge static charge from the lightning. That sort of relieved the human storm.

We arrived two days later, early on Friday, to encounter another emotional scene. The second X unit failed dismally the evening before and Don Hornig spent most of the night being grilled — and the word is grilled, not questioned — by Oppenheimer and Bacher, being accused of incompetent work and so

on. As soon as we arrived I was told what they thought of me as a manager of these incompetent youngsters. So Don Hornig and I went finally to look at the X unit which was located under the bomb tower and discovered that the people who were using it while testing their instruments, horribly abused the unit. The unit was designed to be used only once, and it was tested about ten times to make sure that it worked fine. Well, these characters used it in rapid succession hundreds of times and overheated it so that some soldered joints melted. This discovery relaxed the atmosphere in the headquarters. But Saturday morning another awful thing happened. A telephone message came from Los Alamos that the G Division's magnetic method group found their H.E. assembly's detonation so bad that they could guarantee the failure of the bomb at Trinity. So of course I immediately became the chief villain and everybody lectured me — Oppenheimer, Groves, Bush, who was there by then with Conant. Did they tell me what was wrong with me? Only Conant was reasonable. Sunday morning another phone call came with wonderful news. Hans Bethe spent the whole night of Saturday analyzing the electromagnetic theory of this experiment and discovered that the instrumental design was such that even a perfect implosion could not have produced oscilloscope records different from what was observed. So I became again acceptable to local high society.

On Friday or Saturday, Bacher and his group inserted the plutonium into the pit, then Bradbury and a couple of SEDs replaced the H.E. castings, which had been taken out to be able to get into the pit. The bomb was hoisted to the top of the hundred foot tower. There Hornig installed a fresh X unit and Linschitz and Kalecka, an SED in our division, finally inserted the detonators into the charge. I had very little to do the last two days, just watch others. Sunday night I spent partly up on the bomb tower with Bainbridge and two others below me because weather was bad for the test which therefore had to be delayed and Groves insisted that there was danger of sabotage to the bomb — a perfectly idiotic idea. So we were supposed to watch it with a sub-machine gun in the hands of Captain Bush and that sort of thing. Finally, the decision to fire was made at five-thirty in the morning. We drove back, first unlocking the box containing the safety switch and all of us solemnly watching as Bainbridge closed the switch and locked the box. Then we drove a mile, repeated the operation on a switch box in a trench, and finally got to the locked box in the control bunker six miles away, opened it and closed that switch. The thing was ready to be fired. I had nothing to do and so just before the time counting came to zero I went up to the top of the control bunker, put on dark glasses and turned away from the tower. I didn't

think anything would happen to me, although I was sure that implosion would work, because I was rather convinced that the physicists exaggerated what would happen from a nuclear point of view. Well, I was as wrong as they were on Saturday. As soon as the explosion took place, Oppenheimer and others rushed to join me and I slapped Oppenheimer on the back and said, "Oppie, you owe me ten dollars" because in that desperate period when I was being accused as the world's worst villain, who would be forever damned by the physicists for failing the project, I said to Oppenheimer, "I bet you my whole month's salary against ten dollars that implosion will work." I still have that bill, with Oppenheimer's signature. Now, there is something more to that story, because after VJ day there was a lot of nonsense published in Sante Fe and other more or less local papers about the Trinity test, that I was, as they put it, a temperamental Russian who lost his self-control and embraced and kissed Oppenheimer, whereas all I did was slap him on the back and say, "Oppie, you owe me ten bucks." So, after VJ day, when we had a sort of post-mortem, and all the group leaders of the project must have been there, Oppie said, "you must have read these stories; I want to testify that they are wrong, George never kissed me, but I am now going to kiss him." He did that and gave me the ten dollar bill.

Let me now make a few remarks of a more personal nature. General Groves was really a terror to his subordinates. He was a skillful manager, but he always did things so as to make life difficult for the subordinates. However, he and I had perfectly good relations. I think he saw me as more manly than the effete physicists because of my explosives work. I was to him a sort of kindred spirit.

I had very good relations also with Oppenheimer. He had an incredible ability to have all the threads of this enormous project in his mind and to make the right technical decisions. As to his managerial skills, that's a little different story. Conant regularly came to the project because he was the really active member of the Military Policy Committee, and he and I usually had private technical conversations. I met several times with Niels Bohr when he was at Los Alamos but only because he wanted to know from me how implosion was progressing. I naturally dealt a lot with the British group — Chadwick, Peierls, Tuck, Penney. The man who eventually turned out to be a spy, Fuchs, managed to put himself into a very important position. He was a member of the Theoretical Physics Division, like Professor Hirschfelder, but he also arranged to be appointed as the liaison between Theoretical Physics and X Division, so that he sat in on all our discussions and planning meetings.

At Los Alamos I was treated like a VIP. I had special housing, a tiny little

stone cabin that used to be a diesel station before the war. Oppenheimer sold me, for a nominal sum, one of his saddle horses, a beautiful Quarter horse named Crisis. The Army maintained a horse stable in Los Alamos and for a small fee took care of a half-dozen or so private horses. We never worked on Sundays, that was a hard and fast rule, so on Sundays I rode horseback in the mountains. In the winter of 1944–1945 we built a ski slope nearby using explosives to cut down the trees. We had a lot of surplus plastic explosive, the demolition explosive, and if one builds a half necklace around the tree, then the explosion cuts it as if you had a chain saw — and it's faster. A little noisier, though. Then we scrounged equipment to build a rope tow and it became a nice little ski slope. From my friends in Washington, I got a couple of skimobiles which weren't like the modern skimobiles but more like jeeps on tracks. They weren't very good but we managed to use them to go skiing further out. I played a lot of poker with important people like Johnny Von Neumann, Stan Ulam, etc. You see, before coming to Los Alamos, I went through a very rigorous and expensive poker training school in Washington, headed by Roger Adams, NDRC member and my boss. So when I came to Los Alamos I discovered that these people didn't know how to play poker and offered to teach them. At the end of the evening they got annoyed occasionally when we added up the chips. I used to point out that if they had tried to learn violin playing, it would cost them even more per hour. Unfortunately, before the end of the war, these great theoretical minds caught onto poker and the evening's accounts became less attractive from my point of view.

We did quite a lot of partying on Saturday nights, but there was *one big* party after VJ day in Bacher's house, and by the time we had quite a few refreshments my physicist friends started telling me that I must arrange for a 21-gun salute. Of course I didn't have the guns. Finally, I got into my jeep and got one of my younger friends out of bed, who then insisted on driving the jeep. We went to the H.E. magazines, got out 21 boxes of Composition B (50 pounds each), laid them out on the field (I was stumbling a little because the field was very rough) and fired them off. It was a very impressive performance but when I got back to the party those bastards told me I fired 22 shots.

#### DISCUSSION

*Question:* What field did Von Neumann work in in those days?

*Kistiakowsky:* Von Neumann throughout the war was a consultant to Los Alamos. He spent, toward the end, I think, as much as half of his time there.



When he was there he was a member of the Theoretical Physics Division. But even earlier, you see, he did the important job of convincing Oppenheimer and others who questioned Neddermeyer that if the implosion were perfect, the forces acting on the pit would be such as to compress the plutonium to a density that one would presumably find near the center of a star or something like that, and thereby very rapidly change it from a sub-critical, in the nuclear sense, to a highly super-critical assembly. Von Neumann was very much in favor of implosion. In 1941-1942 he did some important theoretical work for the explosives division which I headed in NDRC (Division 8), so his interest in explosives was genuine.

*Question:* Some of the information passed by the Rosenbergs to the Russians concerned the lens and your aspect of the project. How critical was that information?

*Kistiakowsky:* That is something I have been asked about before. From reading Mr. Khrushchev's memoirs and some other information, I gather that the Russians had started the atom bomb project quite early in the war. For instance, there is the story that when Stalin met with Truman in July of 1945 and Truman told him of a successful Trinity test the day before, Stalin acted as if it were of no interest to him at all. According to Khrushchev, however, he immediately sent a message to Moscow to put Beria in charge of their project. So the project must have been going. Under those conditions the very crude sketches of Greenglass could not have been of great importance. Maybe of no importance whatever. I think what probably was far more important is what Fuchs transmitted because he was able to send detailed results of calculations and also the information on problems of timing the detonators and a lot of other things like that. I think though that even this did not make a tremendous difference, because it turned out that to cause the implosion is a much easier job than we thought it was. But it might have accelerated the Russian bomb by a year or two. This would be my guess. But it's only a guess.

*Question:* I have often wondered how much sooner World War II would have been over if there had been no atom bomb project and so many of our scientists and resources had not been shifted from conventional arms to the atom bomb. Surely this would have speeded up the German part of the war and probably the Japanese.

*Kistiakowsky:* Well, it's a speculation in which I will not engage. After all, the Manhattan District, which was active during the war, was not a very large project - two billion dollars in three years - at a time when the total war

effort was costing nearly a hundred billion dollars a year. So when you refer to resources, you mean the very special resources that were in tremendous demand, but whether they would have altered the war's progress, I don't know. Whether Japan would have delayed surrendering is also an unsolved question. I think that what one now knows suggests that they would have surrendered anyway. We were told, and I am not sure whether the military intelligence people came to Los Alamos or whether Oppenheimer brought the news from Washington, that according to our Naval Intelligence, (as you know there are several kinds of intelligence: there is human intelligence, there's animal intelligence, there's the military intelligence), that according to Naval Intelligence Japan was ready to continue fighting the war and that we would have to go through with our plan of invading the main Japanese islands in November 1945 and that there would probably be a million casualties before the war ended. That information had a tremendous impact on me, on my thinking about the military use of the bomb. Since then, it's become pretty clear that Japan was really far closer politically to surrender than that estimate indicated.

*Question:* Do you think that it is easy for a small group of terrorists to construct nuclear weapons?

*Kistiakowsky:* That is an estimate which I've heard advanced by Dr. Theodore Taylor. I don't think so. Perhaps I am too proud of our work. I think you couldn't build a reliable bomb without doing some experimentation with explosives and that experimentation is more than a small private group could undertake. On the other hand, it would not require the resources of a Soviet Union or India to build a bomb. It could be done on very much of a shoestring. The bomb wouldn't perform as well, but there is quite a leeway. Certainly anything approaching the complexity of the Trinity bomb and of the implosion bomb dropped over Japan, I would say, would require a very major effort. Assuming you already have the fissionable material, I would estimate several million dollars worth of effort and a couple years. One could build a much cruder bomb, but even then it would require some resources. Let's say a country possessing one technical university and some military forces and some kind of proving grounds could do it.

*Question:* What does a lens have to do with implosion? Is it a lens like the lens in my glasses?

*Kistiakowsky:* It's not an optical lens, though it functions similarly. The explosive lens bends the explosion wave going through the explosive. To an



innocent it looks like another piece of explosive. It's made out of two different explosives, and that's the secret of it.

*Question:* Were the scientists at all disturbed that Truman decided to drop the bomb on a population center instead of testing the bomb in an unpopulated area? Did the scientists have anything to say about how the bomb would be used?

*Kistiakowsky:* Well, the scientists in the Chicago part of the Manhattan District — the Met Lab, which by the spring of 1945 was almost inactive because it had done its job — became extremely active trying to stop the military use of the bomb over a city, urging a harmless demonstration instead. At Los Alamos we had some conversations on the subject and I must admit that my own position was that the atom bomb is no worse than the fire raids which our B-29s were doing daily in Japan, and anything to end the war quickly was the thing to do. Other people felt differently but there was no organized movement at Los Alamos to stop the bomb use. I changed my mind afterwards but I was very much influenced by the military intelligence estimate of what would happen that summer. I won't go into detail of some of the more technical arguments against making a demonstration, but it looked unfeasible to me.

*Question:* Was the second bomb that was dropped on Nagasaki necessary? Didn't just a very minor point in the surrender terms remain, namely the safety of the Emperor?

*Kistiakowsky:* The Japanese position was that they could not surrender unconditionally because that would probably mean that the Emperor would be dethroned and maybe even executed. They would be willing to surrender if the monarchy would be retained. I think our excuse for dropping the second bomb was very weak. As I recall it, the argument was: let's drop them quickly — one, two — to give the Japanese government the idea that we have an unlimited supply. We only had two. It would have been at least a month, or maybe two, before another bomb could be produced and dropped over Japan. But, of course, we at Los Alamos had absolutely no control over their use once the bombs were shipped overseas. This happened within ten days or so after Trinity, as soon as we manufactured the new set of H.E. castings. The other type of bomb, the gun type, which was used over Hiroshima, was shipped overseas even before the Trinity test. After that, there was nothing we could change.

*Question:* You said that you had to cut through red tape, to cut corners in

order to make any progress. I wonder if you would describe some of those methods.

*Kistiakowsky:* No sir, they will remain secret. Well, let me tell you this much. There was an extraordinarily elaborate procurement system for military security purposes. We had to order everything from an office in Los Angeles. That office, acting as a part of the University of California, and not of Los Alamos, which was secret, then ordered things from all over the country. These things were shipped to Los Angeles and then were delivered from there to Los Alamos. That resulted in terrible delays and errors. We found ways of getting around them.

*Question:* Was there any awareness in your group of German progress along the same lines?

*Kistiakowsky:* The rumour of German progress was the thing that was egging us on. But by the end of 1944 it became pretty obvious that the Germans didn't have the bomb and wouldn't have it in time. Then the argument presented to us became that we must end the war with Japan as quickly as possible. But in earlier days it was a very real fear that the German bomb would be built and would win the war for them. As a matter of fact, that interesting job assignment abroad I missed because of going to Los Alamos had to do with trying to find out what the Nazis were doing on the A-bomb.

*Question:* Was there just one piece of plutonium in the bomb?

*Kistiakowsky:* We had plutonium cast into two hemispheres that fitted very neatly together. And we had no more plutonium at Los Alamos. The plutonium, however, was being manufactured very rapidly at Hanford and so within a relatively short time after Trinity a second sphere was made at Los Alamos and taken to Tinian Island.

*Question:* What effect did the ending of the war with Germany have on Los Alamos?

*Kistiakowsky:* We celebrated it.

*Question:* I mean in terms of your feelings about the project, its motivation, things like that.

*Kistiakowsky:* Well, naturally it became less important, the whole thing became less intense, as we began to realize that we were certain to win the war. But, as I said, the feeling was conveyed to us that Japan was very far from surrender, that the war would continue for a long time. That continued to provide, I think, the emotional cohesion of the laboratory staff.

## V-3?

The terrible novelty of V-2 had by no means worn off yet, but London last week was already abuzz with speculation about V-3—supposedly an atomic bomb. Allied bombers renewed their attentions to Rjukan, Norway, the site of a heavy-water plant which the Nazis have recently rebuilt after its destruction by the R.A.F. and Norwegian patriots last year. Meanwhile, British censors passed a London dispatch giving the most circumstantial account to date of atomic bomb possibilities.

According to this account, the Nazis

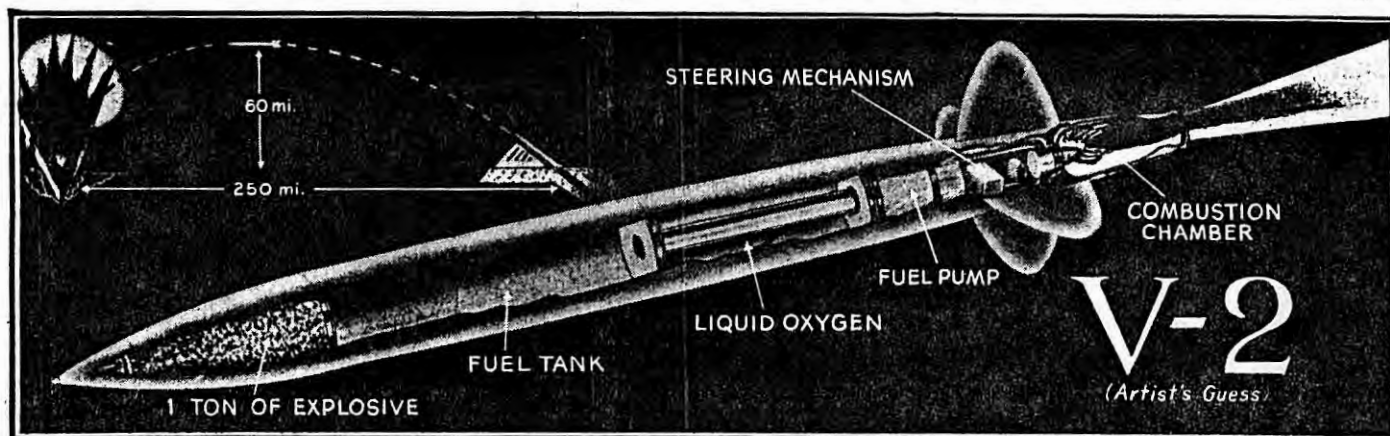
heard-of violence at the point of impact.

**What Is V-2?** Last week V-2 was still almost as great a mystery as V-3. If the British had recovered any duds for examination, they were keeping mum about it. Some Hollanders claimed they had seen V-2 launched from bare ground; others, from 80-ft. concrete pits. Some experts thought it could have been launched from barges off the Dutch coast. V-2 was variously reported to be guided by radio, by gyro compass, by fins, by spinning. But on one thing experts agreed: V-2 is a self-contained rocket, carrying its own oxygen and traveling at such speed (1,000 to

## Whither, Swift?

The chimney swift is one of the swiftest small birds alive (up to 150 m.p.h.). Until last week no one had ever been able to say where it was going in such a hurry, when it took off for the winter. The U.S. Fish and Wildlife Service had banded 375,000 swifts, never traced a one to its winter hideout. For lack of a better theory, some naturalists surmised that the swifts buried themselves in swamps to hibernate.

Indian hunters in a South American jungle produced the first evidence of the swifts' winter whereabouts—13 bands taken from birds they had killed. The place: the Yanayaco River valley in Peru. The birds had been banded in Tennessee, Illinois, Connecticut, Alabama, Georgia,



may have discovered an entirely new approach to atomic explosives. Before wartime censorship blacked out all talk of atomic experiments, it was known that most scientists put their atom-smashing hopes mainly in cyclotronic bombardment of atoms with deuterons—the heavy hydrogen nuclei derived from heavy water. Individual atoms have been smashed, but in a bomb atoms must explode in quantity, each disintegrating atom setting off others. The new Nazi experiments are said to be along lines suggested by the composition of the "White Dwarf," companion of Sirius, which is the densest known star.

**The White Dwarf** is so dense (specific gravity: 61,000) that a cubic inch of its substance weighs about one ton. Physicists believe that ordinary atoms could not be compressed to such density, and they suppose that the tremendous pressures and high temperature of the White Dwarf have broken up its atoms, letting their space-hungry electrons escape and leaving only the much more compact atomic nuclei.

The speculative London report suggested that the Nazis are using the same pressure principle to crush atoms. The crusher: A "Neuman" demolition charge, which explodes inward instead of outward. Used in a sphere, the Neuman charge might develop pressures of tens of thousands of tons per square inch at the center, perhaps enough to disintegrate an unstable atom such as uranium and release its explosive atomic energy. British scientists believe that such an explosion, though not far-reaching in area, would develop un-

3,500 m.p.h.) that ordinary anti-aircraft defenses are useless against it.

The consensus: V-2 is probably propelled by alcohol or gasoline and liquid oxygen. It has a warhead with about a ton of explosive, a supply of compressed gas (perhaps nitrogen) to force the fuel into the combustion chamber, and fins to keep it on a set course. It is believed to carry at least seven times the weight of its explosive in fuel. It probably has a series of jets, operated in succession to keep the rocket going on its long course (and perhaps helpful also in steering). One plausible reconstruction, by Mortier & Scull, Manhattan industrial designers, indicated a steering mechanism in the tail (see cut). It seems unlikely that V-2 is steered by radio, since V-1 is not and, at the heights to which V-2 climbs (60 miles or more), accurate observation to correct its deviations from the set course would be difficult. With a trajectory like that of a long-range shell, dropping sharply from its peak height, V-2 is probably launched at about a 30° angle from the ground for its 250-300 mile flight.

**Glimpses of the Moon.** Last week Britain's famed jack-of-all-sciences, J. B. S. Haldane, philosophically predicted a big postwar future for V-2, which he thought could rise to 200 miles if fired vertically. Haldane: "It could take photographs . . . [of] the sun and perhaps other heavenly bodies. . . . For the cost of a day of war, it should be practicable to send a series of rockets round the moon and photograph its far side."

Ontario. Cried Frederick C. Lincoln, official U.S. observer of bird migrations: "One of the most important ornithological discoveries in at least two decades."

Ornithologist Lincoln added that the swift discovery left only one North American bird-mapping mystery unsolved: where nests the bristle-thighed curlew? No one has ever found its nest or eggs.

## Superman of the Waldorf

The late Nikola Tesla was a spectacular, eccentric scientist and showman. Sure that his name will outlive Thomas Edison's, Tesla's admirers hold that he and Michael Faraday were the greatest electrical discoverers of modern times. Last week one admirer, who according to the inventor himself understood him "better than any man alive," published the first Tesla biography—*Prodigal Genius* (Ives Washburn; \$3.75). The author: John J. O'Neill, science editor of the New York *Herald Tribune*.

O'Neill, throwing off journalistic reserve, describes Tesla as "a superman—unquestionably one of the world's greatest geniuses." O'Neill credits him not only with inventing the polyphase alternating current generator and Tesla induction motor, which

\* Not to be confused with the bird that the late great Poet Yeats rebuked:

O, curlew, cry no more in the air  
Or only to the waters in the West,  
Because your crying brings to my mind  
Passion-dimmed eyes and long heavy hair  
That was shaken out over my breast.  
There is enough evil in the crying of the wind.

# NOW IT CAN BE TOLD

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THE STORY OF THE MANHATTAN PROJECT

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BY LESLIE R. GROVES

LIEUTENANT GENERAL, U.S. ARMY, RETIRED

HARPER & BROTHERS • PUBLISHERS • NEW YORK



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We wished, too, to avoid any widespread mention of such places as Hanford or Oak Ridge and all mention of Los Alamos, as well as any reference to the MED. We also did not want any mention of my name that might arouse the interest of a foreign agent in my activities. Yet to have banned all reference in the near-by papers to Oak Ridge or Hanford would have been neither practical nor desirable, for it would only have tended to attract attention locally. We did try to keep Los Alamos entirely out of the news, but the Knoxville papers were permitted to carry items—mostly in the nature of social notes—about employees and events at Oak Ridge, though nothing, of course, that would help the average reader determine the purpose of the project or its importance. The same leeway was given to the papers close to Hanford.

We did have several unfortunate security breaks, but none of them, so far as we could ever find out, attracted any particular interest. The one with the worst potential for damage was a radio program that discussed the possibilities of an atomic explosion. The script for this had been prepared for the regular news reporter on a network program; he himself had had nothing to do with writing it. Unfortunately, in order to meet his travel schedule, he delivered it from a small affiliated station, where apparently it had not been reviewed to make certain that it did not violate press censorship rules.

From all that we could ever discover, there had been no deliberate breach of security. The information on which the talk was based came from a scientist who was not connected with the project in any way but who evidently had an inkling of what was going on, gleaned, we thought, from some of the project's scientists at the large laboratory in his city. The actual text was written for the reporter by a friend of the scientist. There was never any question in my mind but that the reporter delivered it in good faith. The failure of the radio station to stop it was attributable to plain carelessness.

Another incident that concerned us greatly was the appearance in a national magazine of an article hinting at the theory of implosion. While it did not violate any rules, it was most disturbing. A thorough investigation indicated that it resulted from the work of

an alert and inquisitive reporter in another country.

There was one unfortunate happening not too long before the bombing, when a Congressman, in discussing an appropriations bill, commented on the importance of the Hanford Project. This item was picked out of the *Congressional Record* and was republished in a newspaper without any comment. I could never disabuse myself of the feeling that this newspaper did it with the deliberate intent of letting me know that our security prohibitions were not so effective as we thought.

After the war the excellent co-operation of the American press continued. Articles written by anyone with access to classified information were invariably cleared with my office. In one instance a newspaper learned of a rather large construction job in progress and wrote a series of articles about its most unusual character. Although the publisher of the paper completely disagreed with me, he canceled the articles before publication when I said that I thought it would be injurious to the best interests of the United States to publish them.

PSF: ~~the~~ "R" 4-43

THE WHITE HOUSE  
WASHINGTON

Oct. 27, 1943.

MEMORANDUM FOR

MPS. ANNA ROSENBERG:

Will you check on this again?

F.D.R.

(Orig. comes filed Wash Dept. folder - 2-43)



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WAR DEPARTMENT  
WASHINGTON

October 20, 1943.

MEMORANDUM FOR THE PRESIDENT:

Subject: Union organizational activities in the  
Radiation Laboratory at the University  
of California.

The Army officers in charge of an important and secret project are inquiring as to the status of the Unionization activities at the Radiation Laboratory of the University of California and the possibility of the cessation of such activity. I enclose herewith a copy of my memorandum to you of September 9th and would greatly appreciate it if you could advise me whether results can be accomplished along this line in order that the security of the project may be protected.

(Penned notation) You will remember that I explained to you personally the seriousness of this danger and the extreme urgency of action.

s/ HENRY L. STIMSON

Secretary of War

Encl: Copy memo. to the President,  
9/9/43.

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DOD DNL 5200.9 (9/27/58)

Date- 3-17-59

Signature- Carl L. Spicer



P  
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September 9, 1943.

MEMORANDUM FOR THE PRESIDENT:

Subject: FAECT Organizational Activities in the  
Radiation Laboratory.

1. There has been a marked increase recently in union organizing activity in the Radiation Laboratory at the University of California in Berkeley which is engaged upon one of the most important phases of the work on uranium fission. This organizational activity is being carried on by the Federation of Architects, Engineers, Chemists, and Technicians (CIO) Local No. 25. In the furtherance of their organizational activity this union is assembling lists of the scientific and technical personnel of the laboratory, and necessarily acquiring considerable information with respect to the work being carried on there.

2. The paid organizer of Local No. 25, Rose Segure, and the local FAECT International Vice-President, David E. Adelson, are definitely Communists. They are close associates of and receive the constant counsel of one Steve Nelson, who is a member of the National Committee of the Communist Party, U.S.A., and the head of the Communist Party in Alameda County, California. Nelson induced Joseph Weinberg, a member of the staff of the Radiation Laboratory, to furnish him secret information concerning the work with the announced intention of transmitting it to the U.S.S.R. and it is believed he has done so.

3. Lists of the persons employed upon this Project are classified as secret because information as to the nature and extent of the work could be deduced therefrom. The security of the work has already been compromised by the activities of the union. Continued union activities will be extremely dangerous not only to security but to the speedy completion of the work and it is unquestionable that the union organization will be used to further espionage activity of agents of a foreign power.

4. It is urgently recommended that at the earliest opportunity you have a personal conference with Mr. Philip Murray, the head of the CIO, and request him in the strongest terms to take such steps as are necessary to ensure that the FAECT immediately cease, for the duration of the war, all union activity whatsoever with respect to the Radiation Laboratory, University of California, at Berkeley. This should include disbanding the laboratory organization of Local No. 25. There is no objection, however, to employees of the laboratory retaining membership in the union, provided it is in a wholly inactive status during the war.

Respectfully yours,

Franklin D. Roosevelt Library

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DOD DIR. 5200.9 (9/27/58)

HENRY L. STIMSON

Secretary of War.

Date- 3-17-59

Signature- *Carl L. Spencer*

FROM  
*The Morgenthau Diaries*

*Years of War*  
*1941-1945*

BY JOHN MORTON BLUM



ILLUSTRATED WITH PHOTOGRAPHS

HOUGHTON MIFFLIN COMPANY BOSTON

1 9 6 7

the nation," had the strength to perpetuate that extraordinary subsidy, the strength even to prevent the Treasury from selling its enormous hoard of silver for less than 71.11 cents an ounce, the artificial domestic price. Nevertheless, small quantities were sold for engine bearings, military insignia, and solders. The Treasury itself consumed 48,900,000 ounces by increasing the percentage of silver in the five-cent piece so as to release nickel and other base metals for crucial industrial purposes. More important, new legislation permitted the release of 410 million ounces to foreign governments receiving Lend-Lease assistance.

Even the statute of 1934 did not forbid domestic loans of silver. In response to a request of the War Production Board, Morgenthau in the spring of 1942 had his staff contrive a scheme by which the department could furnish silver for electric conductors in government-owned aluminum and magnesium plants. That silver would not be consumed but preserved and later returned to the Treasury. This use of the uncoined silver, beyond the small portion needed for backing silver certificates, would "release large quantities of copper for other war needs." Moved especially by that consideration, Roosevelt endorsed the plan, which the Attorney General also approved. On May 6, 1942, the Treasury leased to the Defense Plant Corporation 40,000 of the available 47,000 tons of unpledged bullion. The Senate Silver Committee did not object, but it soon prevented similar loans of the silver bullion earmarked for reserve against circulating certificates.

Six thousand tons of the silver loaned to industry went into silver wire for electromagnets at the top-secret plant at Oak Ridge, Tennessee, producing U-235 and plutonium. Morgenthau knew only that the War Department was utilizing the silver in some secret way. Indeed at no time in his years in office did he have any knowledge about developments in atomic energy. On one occasion Secretary of War Henry Stimson told him that in connection with a "very secret matter" he wanted to put \$12 million in the Federal Reserve Bank in New York, for which he needed the Treasury's consent. Morgenthau replied that the War Department had always before told him what was going on, but Stimson said that the matter was "so much more secret than anything else that I've ever had that I don't feel able to do that." Morgenthau was hurt. "If the Secretary of the

Treasury can't be trusted," he said, "he oughtn't to be Secretary of the Treasury." But Stimson, while sorry to have shocked his associate, insisted that rather than bring the President into the question, he would deposit the funds in a private bank. "He won't trust me," Morgenthau exploded when the conversation ended. "To hell with him. I am sick and tired of it, anyway." But within a week he was persuaded of the advantages of having the War Department turn to the Federal Reserve Bank of New York rather than to a private bank, and he then assured Stimson that he would arrange the details with the appropriate officer, who turned out to be General Leslie Groves. Even after talking with Groves, Morgenthau had only "got the impression that it's some secret weapon." Twenty years later he surmised that Roosevelt, knowing of his opposition to poison gas, was unwilling to tell him about the atomic bomb, the use of which he would have questioned.

While Morgenthau also disapproved of the continuing diffusion of federal authority over war production, he had no mandate from Roosevelt to intercede. Within the reach of Treasury policy, the Secretary did what he could. As the President knew, he had other absorbing duties, not the least the responsibility for raising the money to pay the enormous costs of the battle against the Axis.

#### 4. A Tremendous Program

Financing the costliest war in history imposed severe strains on the Treasury. One involved an exhausting effort to persuade the balky Congress to raise taxes high enough to cover one-half the expenses.\* Another related to the "tremendous program," as Morgenthau put it, to defray the balance of expenses by borrowing. A third grew out of continual controversy with various federal agencies about Morgenthau's effort to keep the purchase of government bonds on a voluntary basis. Persisting difficulties arose, too, from the attempt to hold down interest rates on federal securities without thereby increasing wartime inflation.

With the federal government accumulating a huge wartime debt,

\* Chapter II deals with the Treasury's wartime tax proposals, their failure in Congress, and their implications for the problem of inflation. That chapter also covers the debate about voluntarism in the bond program.

preview of Treasury policy toward General Aniline in Diary 484:232; for Morgenthau's conversation with the President on that issue, see Diary 484:238. The conversation with Bullitt is from Diary 491:1; for Mack's views, see Diary 492:64-70; on the vesting and the ensuing Treasury orders, see Diary 492:127; Diary 497:134, 166-69; Morgenthau's remarks to Hopkins are from Diary 501:222-33; his report of the Cabinet meeting of February 27, from Diary 502:7-10. Roosevelt's directions of March 5 are in Diary 504:70-72; Morgenthau's letter to McConnell, in Diary 506:128-30. For the Executive Order of March 11, 1942, see Diary 507:51. For Morgenthau's conversation with Rosenman on July 7, 1942, see Presidential Diary of that date.

3. Producing for War, pp. 11-14

For the episode of the trucks, see Diary 479:1-3, which includes Morgenthau's conversation with Patterson about general procurement problems. For further discussions of those problems among the principals from government and labor, see Diary 480:42-43, 63. The Executive Order establishing the WPB is in Diary 485:310. On silver policy, see A. S. Everest, *Morgenthau, the New Deal and Silver* (New York, 1950), Chapter VIII, and Diary 511:165-66, 341; Diary 512:81-88; Diary 514:68-70, 246; Diary 521:273-82; Diary 522:14-17; Diary 562:321 — the last reference relates to Oak Ridge. Morgenthau's crisp talk with Stimson about secrecy, and the ensuing developments, are from Diary 782:211-16; Diary 785:1-6; Diary 788:24-27.

4. A Tremendous Program, pp. 14-16

This section and the following sections of this chapter owe much to H. C. Murphy, *National Debt in War and Transition* (New York, 1950). For Morgenthau's remarks to Bell on December 23, 1941, see Diary 477:57. Eccles's reply to *Time* is in Diary 580:3-6.

5. Voluntarism — Treasury Style, pp. 16-22

Roosevelt's remarks about the bond program and the G. M. plan are from Presidential Diary, April 15, 1942, as is Morgenthau's statement about war-mindedness. Smith's comments, along with other miscellany, are in a file on "War Savings" in the Morgenthau MSS

# Other Atomic Bomb related Collections

## **World War II: War Department Atomic Bomb Development Harrison-Bundy Papers**

9,038 pages of the Harrison - Bundy Files relating to the development of the atomic bomb, copied from material held at the National Archives.

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