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NATIONAL DEFENSE RESEARCH COMMITTEE

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BY AUTHORITY OF H.F. Carroll Inter-Office Memorandum  
BY DATE 12-18-64

To: Dr. Vannevar Bush December 14, 1942  
From: James B. Conant  
Subject: U.S. - British Relations on S-1 Project

As Chairman of the S-1 Executive Committee and alternate to the Chairman of the Military Policy Committee dealing with S-1, I venture to set down my thoughts on the future of U.S. - British relations in this field.

It seems to me clear that the Military Policy Committee and those concerned with policy matters must ask the President of the United States for a clear directive on the future of U.S. - British relations in this area. Up to now we have had complete interchange in the scientific field which has been under your jurisdiction and by delegation mine. Now that the U. S. Corps of Engineers is in charge of many phases of development and will be in charge of all production, it seems important to have a clear understanding of the over-all policy. For it will be clearly difficult to continue to have complete scientific interchange on the one hand and restricted development interchange on the other unless the arrangement is carefully spelled out, for the line between research and development is nebulous, and the same people are often involved in both.

In presenting the matter to the President of the United States, it seems to me that it should be pointed out that there is presumably only one reason for free interchange of secret military information between allied nations,- namely, to further the prosecution of the war in which both are engaged. In almost all fields with which you and I are familiar, such interchange is essential because both the British and ourselves are engaged in the development and manufacture of the same or similar devices. In the one case with which I am familiar where this would not have been true,- namely, a certain poison gas which could not be manufactured in England because of lack of war materials,- in this case the Secretary of War ruled that we were under no obligation to pass the information to the British.

In the case at point,- the manufacture of "25" or "49",- the British have told us that neither in England nor in Canada are there facilities adequate for the construction of the plants for the manufacture

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of the material. They have no intention of engaging in manufacture in this war. Therefore, our passing our knowledge to them will not assist the British in any way in the present war effort.

At present, the British have well along in the development stage a diffusion process. Further knowledge of this development and its progress through later stages would be helpful to us in the construction of our diffusion plant. Such information is not vital, however, as it has now been decided to proceed with the American plans without waiting for the trials of the British models. A complete cessation of interchange in this particular field, therefore, would thus hinder somewhat, but not seriously embarrass the United States effort.

Turning to the "heavy water" method of manufacturing "49", the case is similar. The British will gain nothing by access to our information which will help them in this war. To be sure, a group of capable men is being assembled in Canada to work on this project; this group includes at least one man (Halban) who is an expert in this field (perhaps the man who has given the most thought to the problem in either the United States or the U.K.). It would be advantageous to the United States if the talents and knowledge of this group could be utilized, but it would not hamper the effort greatly if the cessation of interchange resulted in the withdrawal of this group from the effort.

It should be pointed out, of course, that if the United States should decide to bar all further flow of information on the S-1 project to England, the Canadian Government might refuse to allow the product of the Trail Heavy Water Plant (located in Canada, but financed by the United States) to cross the border to the United States and might also do likewise with the ore. (The heavy water produced by the Trail Plant will be 0.5 tons a month beginning next summer; by January 1944 it is proposed to have the United States heavy water plants producing at a rate of 2-5 tons a month.) The refusal by the Canadians to let the United States have the product of the Trail Plant would thus slow down our development program but not cripple it. The question of the ore is more complicated, and until the situation in respect to the Colorado supplies has been further explored, I should not want to hazard an opinion as to our self-sufficiency.

The question may well be raised as to whether it would be fair for the United States now to cease to interchange information on the S-1 project. Considering the matter from this viewpoint, the following facts must be borne in mind. The basic ideas are common to both countries, indeed, to our enemies as well. The two diffusion processes have been pushed along independently but with frequent interchange of ideas. It would be impossible to say which group had done the most borrowing.

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The use of heavy water in a power plant has been pushed most vigorously by the British because Halban came to England. On the other hand, until U. S. scientists discovered the fact that the by-product "49" would probably be explosive, the British put the heavy water power plant in a position of low priority. If there be any national rights in this whole area "49" may be said to be a strictly U. S. invention.

From the above, I understand (a) there would be no serious hindrance to the whole project if all further interchange between the United States and Britain in this matter were to cease, and (b) there would be no unfairness to the British in this procedure. On the other hand, the British would certainly be displeased and whether the resulting friction would produce serious repercussions in regard to the supply of materials from Canada or in other areas, I am not in a position to judge. The advantages of restricting all further information to the United States is obvious. Secrecy could be more easily controlled. We are now just reaching the point where the advances are military secrets of the first order of importance.

It seems to me the above considerations should be presented to the President (in briefer form perhaps), and it should be made clear that one of the three following plans should be ordered.

- (A) Cessation of all interchange.
- (B) Complete interchange not only in the research field but in development and production, including free interchange of personnel.
- (C) Restricted interchange along clearly defined lines, for example as follows:
  1. Electromagnetic method - no interchange.
  2. Diffusion - complete interchange between the U. S. firms designing and constructing the Plant and the British concerned with same project.
  3. Manufacture of "49" and heavy water - interchange only of scientific research; no interchange of the design of plants. The Trail product to go to the Canadian group with the explicit agreement that all the information thus obtained would be made available to U. S. engineers, but there would be no development work in Canada and no British or Canadian access to design of our plants or the plants after construction.
  4. No further interchange on fundamental properties of "25" or "49" on method of military use.

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Considering this subject by itself and leaving out other international complications, I believe procedure (c) is in the best interests of the United States. My second choice would be procedure (a).

*JBC*  
J.B.C.

*Butcher may not accept c.*