

March 30, 1944

Mr. A. H. Compton

Mr. L. Szilard

Today you asked me whether a liquid lead-bismuth alloy can be used as a cooling liquid in contact with beryllium metal.

Looking through my files I find that I raised this question with Mr. Chipman about November 15, 1943 and asked Mr. Chipman to have the beryllium-lead and beryllium-bismuth systems investigated so that we might know the answer to this question. Mr. Chipman wrote me a note at that time explaining that in view of their directives to concentrate all efforts on the water cooled system he would not be able to assign anybody to investigate that task.

I am relating this to you because it is one more of those examples which seem to illustrate the following general principle: As our project is organized at present it is almost impossible to get anything investigated which individual members of the project consider important from the point of view of preparing the ground for decisions which will have to be taken in the near future. Such investigations are prevented by our overall directives. Overall directives are of course necessary and nobody could complain if they regulated say 90% of our efforts, but a certain fraction of our efforts ought to be protected from interference by them. Unless that is done we shall lack the evidence which is needed for arriving at a sound decision.

I believe that this is part of the general trouble which is clearly recognized by the members of the Chicago Laboratory. Similar trouble exists in other special projects connected with the uranium project and, I hear, in certain other projects which are not connected with the uranium work. This indicates perhaps that it will not be too easy to find a remedy for this evil, but at least we ought to try.

LS:s

cc: Allison

Metallurgical Laboratory

March 26, 1943

Mr. A. H. Compton, Director, Metallurgical Laboratory:

I have informed the Metallurgical Laboratory's representative fully with regard to ideas and inventions dealing with the production and utilization of the fission chain reaction which I consider patentable and which were developed by me previous to my employment by the University of Chicago. Such information is given in . I have not made patent applications dealing with this subject except as follows.

I agree to assign to the University of Chicago all patent rights dealing with the fission chain reaction and its use that have been made by me since my employment by the University of Chicago as of Feb. 1, 1942, and until my employment by the University of Chicago shall terminate.

Signed _____

Date _____

Cumypton

Metallurgical Laboratory

September 24, 1942

C. N. Cooper
R. F. Christy

L. Szilard

I have requested Fermi who is chairman of the Technical Committee to appoint a two man committee for the purpose of giving to the Technical Committee a preliminary report on the advantages and disadvantages of bismuth cooling in which I have personally taken an interest for some time in the past. Fermi appointed you two to serve as such a committee, and asked me to communicate this fact to you. He hopes that you will be able to accept.

I assume such appointments will be submitted to the scrutiny of the whole Technical Committee in the future. This simplified procedure was adopted merely as an emergency measure, pending future intensification of the work of the Technical Committee, and must not be considered as a precedent.

L. Szilard
L. Szilard

E. Fermi,
Chairman of Technical Committee.

RESTRICTED

January 26, 1941, SPECIAL REPORT TO MEMBERS OF THE S-1 PHYSICS PROJECT

Centralized Laboratory at Chicago

On Saturday, January 24, word went out to the leaders of the S-1 Physics Project that the work will be centralized at Chicago as rapidly as possible. A meeting of the Advisory Council, consisting of Messrs. Compton, Fermi, Doan, Wigner, Szilard, Allison, Nier, and Breit, has been called at Chicago on Wednesday, January 28th, to consider details of moving and organization. *Wheeler*

Immediate major appointments in the new organization include Richard L. Doan as director of the laboratory, and E. Fermi as Co-ordinator of Research. Fermi's peioneer studies and his important contributions to our present work, we all know. Doan has come to us from the Phillips Petroleum Company, where he has been chief physicist and has recently been made Associate Director of their research laboratory, engaged upon vigorously developing industrial research. Mr. Compton as project leader, is personally responsible for its development.

Eugene Wigner, as chairman of the theoretical committee, and S. K. Allison as chairman of the experimental committee, will clear their plans for work through Mr. Fermi, and their facilities and personnel through Mr. Doan.

For housing the project, a large part of Eckhart Hall at the University of Chicago is immediately available for offices and minor laboratories. The present cyclotron room (old power house) and two other newly finished large rooms will serve as major laboratories.

The selection of a suitable name for the laboratory, for use on letterheads, etc., will be considered by the planning board this week. "Metallurgical Laboratory of the OSRD" has been proposed. Other suggestions are invited. Its present address is 5734 University Avenue, Chicago, Illinois.

It has long been recognized by all concerned that centralization is essential for the effective progress of this work. The choice of the Chicago site will accomplish this result, and will make unnecessary a second laboratory move when success begins to crown our efforts.

Arthur H. Compton

Arthur H. Compton
Project Leader

TIME IS SHORT

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WESTERN UNION

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942 JAN 25 AM 12 20

PROF L SZILARD, DEPARTMENT OF PHYSICS=

AK COLUMBIA UNIVERSITY NYK=

THANK YOU FOR COMING TO PRESENT ABLY COLUMBIA

SITUATION NOW WE NEED YOUR HELP IN ORGANIZING THE

METALLURGICAL LABORATORY OF THE OSRD AT CHICAGO CAN YOU

ARRIVE HERE WEDNESDAY MORNING WITH FERMI AND WIGNER TO MEET

WITH OTHER MEMBERS OF PLANNING BOARD TO DISCUSS DETAILS OF

MOVING AN ORGANIZATION=

ARTHUR H COMPTON.

OSRD FERMI.

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To PROF A H COMPTON = _____ 1/27 1942

Care of or Apt. No. UNIVERSITY OG CHGO CHICAGO ILL = _____

Street and No. _____

Place _____

EXPECT TO BE IN CHICAGO WEDNESDAY MORN ING TOGETHER WITH FERMI
AND WIGNER. EXPECT YOU WILL WISH TO HAVE A PRIVATE TALK
WITH FERMI AND WIGNER = _____
SZILARD COLUMBIA UNIVERSITY. _____

WANT A REPLY?

"Answer by WESTERN UNION"
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included without charge.

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ROUGH DRAFT

January 27, 1942

Dear Professor Compton:

I wish to thank you for the opportunity you gave me to talk to you with complete frankness last Saturday. You will see by this letter that I have corrected myself on certain points but, unfortunately, my general picture of the whole situation is still very much the same.

I am one of those who believe that dislocating the Columbia group would greatly retard the progress of the work. If I, nevertheless, took a strong stand for immediate concentration of the work under your direction, it was because I felt that the most important task is the creation of harmoniously working organization which has full power and authority to take action in connection with every phase of the work. I do not believe that the fait accompli which you have created with respect of immediate concentration at the University of Chicago does not achieve this purpose. can

I would have
If you ^{had} decided to concentrate the whole project at some other university, everybody ~~will~~ whole-heartedly support your decision. We are only too keenly aware of the necessity of having a director who has full and undivided authority to act according to his own judgment, and we could not wish for a better person than yourself. Naturally, we would have expected a full discussion in the steering committee of the facilities and other advantages of the prospective place of your choice. But after all of us had had a say, we would have gladly left it to you to weigh the opinions which were expressed and we would have unquestioningly trusted you to arrive at a ~~wise~~ decision

w *+*
You ~~may have~~ felt when you decided in favor of the University of Chicago that you had not be influenced in your decision by your connection with Chicago, and that you had been guided solely by the interests of the project. I, for one, can fully understand that feeling, since I firmly believe that, placed in a similar position, I would be able to keep the interests of the project and other considerations in more detached compartments. It is an entirely different question, however, whether you can expect to be accepted as ~~the~~ the umpire where the University of Chicago is concerned, and whether you can ask that your decision be accepted as motivated by objective considerations only.
too

he - tomorrow in

You will have an opportunity to learn Fermi's and Wigner's reactions ~~on the University of Chicago~~. I am speaking here only for myself. It doesn't seem to me that Chicago is a good place for concentrating the project. ~~I hope that you will succeed~~ if you stay at Chicago in carrying out your intention of giving your exclusive and undivided attention to the metallurgical project. The same objections which were raised against Berkeley in connection with the difficulty of establishing close collaboration with Murphree hold also for Chicago. You may think that these objections hold for Chicago to a lesser degree, but in reality the situation might even be worse in this respect. In Berkeley the present arrangement would have been so obviously unworkable that you would have compelled a modification of the present division of authority between you and Murphree. In Chicago the arrangement may be just workable and it will probably work badly.

you might
But

it

To ~~make matters worse~~ your decision was reached without consultation with the steering committee. Fermi, Wigner and myself were completely taken by surprise. The steering committee, which is thus treated to begin with, cannot be expected to act as a responsible body.

O.K.
O.K.

With one director in Chicago, another director with little time to spare in New York, a discouraged steering committee, and a half-hearted crew seem to be in store for us if we move to Chicago.

Apart from the effect on our group, there is the effect on the larger community of scientists of which our group is a part. Those connected with our project know that you are prepared to make the sacrifices of moving with your family to Berkeley, but to those scientists not connected with the project, and who are the vast majority, it may seem that you ask Fermi and the rest of us to take the step which you yourself were unwilling to take.

address
or

Today I was asked by a member of the department who is not connected with the metallurgical project whether it was true that the University of Chicago was tearing this project out of the hands of Columbia University and whether I thought that Hutchings had something to do with it. ~~While this is a somewhat awkward situation for all of us, I for one would be the first to agree that it should not be given too much weight. As long as we are sure we are actually doing the right thing, we shall be willing to face unjust criticism.~~

~~Others will perhaps stress this and other aspects of your decision. To me the central issue seems to be whether right shall go before might, and after all this is an issue the whole war is about. The naturally situation would be entirely different if you were prepared to submit the issue of choosing the University of Chicago to an impartial arbitration body. If you choose to do so, I am sure it could be achieved without any loss of time. We could ask some group like Du Bridge and the two Loomises at MIT or some other suitable~~

the

persons to hear the evidence and come to a decision within twenty-four hours. If their decision is for Chicago, the air will be cleared, and ~~I for one would do my best to try to eliminate all traces of hard feeling which may be left over.~~ *and all traces of hard feeling would be* If the decision were against Chicago, you would be free to choose any site within the boundaries of the United States and could expect us to wholeheartedly collaborate, provided the steering committee is given an opportunity to discuss the matter before your final decision is reached.

A mistake has been made and if it is not quickly corrected, the whole project will suffer ~~irreparable~~ damage. ~~Whether you will be able to correct it I am unable to say. This is for you to decide.~~

all Somehow I feel that I ~~show~~ *would* more respect to you by resisting your decision than by complying with it. Complying with it would follow the line of the policy of the lesser evil which has been followed by most of us in connection with our project for over two years and which is responsible for the terrible state of organization which we had in the past.

them As far as I am concerned, the decision is out of my hands. I have told Fermi and Wigner that if they should ~~decide to refuse collaboration, and if they are prepared to take a constructive rather than a negative stand with respect of the general question of immediate centralization under your direction,~~ *choose* I would act likewise. If they should decide to collaborate, I will do ~~likewise,~~ *the same* and I will collaborate as wholeheartedly as I can.

There is another issue which I would like to mention in this connection. As you know, Fermi is rather sensitive about the fact that he doesn't have general clearance for the entire uranium work. I am in the same boat, and although I am not particularly sensitive about it, I nevertheless now believe that Fermi was right in stressing his point at the present time. Both you and Urey have repeatedly attempted to correct this situation, and my understanding is that Dr. Bush and Dr. Conant are not in a position to do anything about it. ~~As far as I can see, this issue is not at present of any importance,~~ but if the other more serious problem can be solved, I would like to talk about this point with you, and perhaps it is possible to think of steps which will make it easier for Dr. Bush and Dr. Conant to accept your recommendations on this issue..

is at present containing not the main issue
Yours sincerely,

L. Szilard

Negotiation

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CA 175 112 NT=CHICAGO ILL 15

DR LEO SZILARD= ~~QR~~ QR

1942 FEB 16 AM 4 42

DEPT OF PHYSICS COLUMBIA UNIVERSITY NYK=

FOLLOWING YOUR RECOMMENDATION RODDEN WILL SET UP ADEQUATELY EQUIPPED ANALYTICAL AND CONTROLLED LABORATORY BEVERLY AND WILL ASSUME RESPONSIBILITY LIKEWISE FOR BUREAU WORK ON ANALYSIS AND PURITY CONTROL OF OUR MATERIALS. HE WILL THUS ACT AS OUR CENTRAL AGENT FOR CONTROLLING PURITY OF MATERIALS USED BEVERLY AND ELSEWHERE. WILL ALSO CONTINUE WITH HYDRIDE PRODUCTION THOUGH PRIMARY RESPONSIBILITY FOR THIS ASSIGNED TO MURPHREE. THUS FURMAN IN DEVELOPING NEW METHODS SHOULD BE RESPONSIBLE TO RODDEN. FERNELIUS OF OHIO STATE STRONGLY RECOMMEND TO HEAD CHEMICAL PROCUREMENT. REQUIRE ALSO GOOD CHEMICAL ENGINEER FOR PLANNING PLANT. SECOND WESTINGHOUSE SAMPLE SHOWS 150 PARTS PER MILLION BORON. IF THEY CAN SOLVE THIS PURITY PROBLEM THEIR PLANS WILL GET FAST ACTION=

A H COMPTON.

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February 6, 1942

Professor A. H. Compton
University of Chicago
Chicago, Illinois

Just received Alexander's letter. Situation very unsatisfactory and also badly held up on priorities. Present arrangements about priorities complete mess. Wonder if you would approve placing this point on agenda of next meeting of steering committee? Collecting information concerning this point from D. P. Mitchell. Suggest Hilberry finding out how they get around such difficulties at M.I.T. Furman back from Beverly. Confirms view that present Port Hope process ~~unsafe~~ from point of view of rare earths. Asked Furman to give this point precedence over everything else. Furman informs me that Taylor willing to release him of part of his departmental duties only. Kindly advise when to expect you in New York

Szilard

~~unsafe~~

unsafe

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To _____ 19____

Care of or Apt. No. _____

Street and No. _____

IF HE COULD START IMMEDIATELY. AWAITING YOUR REPLY CONCERNING IMMEDIATE ORGANIZATION OF NEWYORK OFFICE. SORRY NOT TO ATTEND CONFERENCE ON CHEMICAL EXTRACTION. ANYWAY THIS POINT HAS BEEN CHIEF CONCERN OF WIGNER WHO KNOWS MORE ABOUT IT THAN

I DO=:

SZILARD COLUMBIA UNIVERSITY.

WANT A REPLY?

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Send the following telegram subject to the terms and conditions of the tariff by agreed to

To PROFESSOR ARTHUR H COMPTON=

Care of or Apt. No. UNIVERSITY OF CHICAGO CHICAGO ILL=

FURMAN WILL DISCUSS WITH TAYLOR WHETHER HE CAN BE ENTIRELY FREED FROM DEPARTMENTAL DUTIES AND WILL LET ME KNOW WHETHER HIS SALARY SHOULD GO ON PRINCETON CONTRACT. BOTH SMYTH AND FURMAN AGREEABLE TO HAVING SALARIES OF PRINCETON CHEMISTS GO ON SMYTH'S CONTRACT. SHALL WIRE YOU AMOUNT REQUIRED FOR SIX MONTHS WHEN FURMAN READY WITH ESTIMATE OF COST SO THAT YOU MAY BE ABLE TO GUARANTEE THIS AMOUNT TO SMYTH IF PRESENT. PRINCETON FUNDS SHOULD PROVE INSUFFICIENT. HAVE TALKED TO RODDEN ABOUT FURMAN'S ASSIGNMENT AND RODDEN WILL SEE FURMAN TOMORROW, THURSDAY. MEANWHILE CREUTZ TAKES RESPONSIBILITY FOR STIMULATING WESTINGHOUSE. KINDLY ADVISE WHEN TO EXPECT LONG. WORK AWAITING HIM IS RAPIDLY ACCUMULATING AND WONDER

4 1924

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TAKE CARE OF ALL OFFICE EXPENSES AND HAVE APPROXIMATE
 EXPENSES REFUNDED AT THE END OF EVERY MONTH BY YOU.
 SUGGEST WILSON CALL ME FROM CHICAGO SO AS TO ARRANGE
 MEETING AT EARLIEST DATE=
 SZILARD COLUMBIA UNIVERSITY.

WANT A REPLY?
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RECOMMENDED BY PHYSICISTS AT THE UNIVERSITY OF ROCHESTER FOR HIS WORK IN RADIOACTIVE CHEMISTRY MIGHT BE VERY DESIRABLE ADDITION IF YOU CAN GET HIM FROM NOYES WITH WHOM HE IS ENGAGED IN DEFENSE WORK. TRYING TO ORGANIZE OFFICE AT COLUMBIA WITH TYPEWRITER AND SECRETARY KINDLY ADVISE WHETHER THIS HAS YOUR APPROVAL. IN VIEW OF DIFFICULTY OF FINDING INTELLIGENT OFFICE HELP AT THE PRESENT TIME WOULD LIKE TO KNOW THE LIMIT IN SALARAY WHICH WE CAN PAY ON YOUR PRESENT CONTRACT WITH WASHINGTON. WOULD ALSO LIKE TO GIVE SOME INDICATION AS TO PROBABLE DURATION OF OFFICE. I PERSONALLY THINK IT WOULD BE DESIRABLE TO HAVE A PERMANENT OFFICE IN NEWYORK FOR YOUR USE AND THE USE OF ALL OTHERS WHO MIGHT BE CHARGED WITH LOOKING AFTER OUR MATERIALS. I WONDER WOULD IT NOT BE SIMPLEST TO HAVE COLUMBIA CONTRACT

Send for

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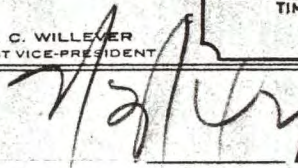
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ARTHUR H COMPTON =

10

19



Care of or Apt. No.

UNIVERSITY OF CHICAGO CHICAGO ILL =

WIGNER FAVORABLY IMPRESSED BY FURMAN WHO IS ALSO STRONGLY RECOMMENDED BY UREY FOR ANALYTICAL WORK. MEETING FURMAN AND SMYTHE TODAY AT PRINCETON ON ORDER TO MAKE DEFINITE ARRANGEMENTS. SHALL ARRANGE FOR FURMAN TO MEET RODDEN IN BEVERLY AND SCRIBNER AND HOFFMAN AT NATIONAL BUREAU OF STANDARDS. AWAITING YOUR ADVICE CONCERNING LONG. UREY NOT IMPRESSED BY VANCE AT YALE RATHER HE RECOMMENDS MURPHY IF LONG NO AVAILABLE. ARADIN FORMERLY AT UNIVERSITY OF ROCHESTER NOW WITH BAUSCH AND LONG GOOD ANALYTICAL CHEMIST AND SUITABLE PERSONALITY FOR COORDINATING CHEMICAL WORK WOULD BE VERY DESIRABLE ADDITION TO OUR GROUP IF YOU ARE ABLE TO GET HIM. FLAGG NOT KNOWN TO ME PERSONALLY BUT HIGHLY

The University of Chicago

Ryerson Physical Laboratory

February 19, 1942

Dr. Leo Szilard
Department of Physics
Columbia University
New York City

Dear Dr. Szilard:

Following our conversation last week, I talked with Dean Pegrarn concerning the allocation of your salary. It seems to us, in view of the fact that your work is now wholly associated with the Metallurgical Project centered at Chicago, and especially in view of the fact that the office which you have at Columbia is intended as the New York office of this Project, that your salary should be paid from Chicago. We do not see that this should impair your desire to maintain residence in New York City in connection with the application for American citizenship. If this is not agreeable to you, will you kindly let me know?

In order that the appropriate salary adjustment may be made, will you kindly prepare for me a memorandum indicating the various items that should be taken into account.

Yours cordially,

Arthur H. Compton

Arthur H. Compton

KT

cc: Mr. G. B. Pegram
Mr. J. C. Stearns

P-

February 25, 1942

Professor Compton

L. Szilard

In connection with the possibility that you might want to employ Teller on the Chicago Project there arises the following question:

It seems to be clear that if you employ him there are three possibilities.

- a. That his clearance comes through.
- b. That his clearance does not come through.
- c. That he is refused clearance, and has to be dropped from the project.

The question which arises in this connection is the following:

Would the mere fact that he has more than two close relatives in Hungary (even if Teller is found to be otherwise O.K.) necessarily lead to either case b, or case c, and which of the two is more likely?

L. Szilard

P.S. Teller is a Naturalized American citizen of Hungarian birth.

LS:g

Copy to N. Hilberry

Norman:

*When you are in Washington
please see if you can get
the answer to Szilard's
question*

2/25/42

E. H. C.

The University of Chicago

Metallurgical Laboratory

March 4, 1942

MIDWAY 0800
EXT. 1290

Dr. Leo Szilard
Department of Physics
Columbia University
New York City

Dear Dr. Szilard:

In a conversation just now with Mr. Frankel of the Westinghouse Lamp Company, I learn that Dr. Marden desires to have the help of a chemist for a few weeks to assist with the routine analysis associated with setting up the production of metal. Will you be good enough to get in contact with Marden and find just what his needs are?

This will then serve as your authorization to find an appropriate chemist, perhaps through Dr. Furman or Dr. Urey and make whatever financial arrangements, chargeable to this office,* which seem to you appropriate to meet the needs of Dr. Marden.

Yours very truly,

Arthur H. Compton

KT

Arthur H. Compton

cc: Mr. Stearns

** and subject to our final approval*

March 10, 1942

SPECIAL DELIVERY

Professor A. H. Compton
Hotel Pennsylvania
Seventh Ave. & 33rd Street
New York, N. Y.

Dear Professor Compton:

Tomorrow (Wednesday) we are having a conference at Columbia with Marden, Frankl, Creutz, Pregel and Wigner in various combinations starting at 10:30 A.M. and we hope to be through by 12:30. If you wish to drop in shortly before that time, you could give your blessings on whatever we may have decided.

You could have lunch with whomever you wish, and Teller is expecting to see you at 2 p.m.

If you intend to return to Chicago tomorrow, then it might be useful if Wigner and I could see you sometime in the afternoon to discuss some general questions.

Sincerely yours,

L. Szilard

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COPY OF WESTERN UNION TELEGRAM

DAY LETTER

March 26, 1942

Professor A. H. Compton
University of Chicago,
Chicago, Ill.

PREGEL HAS NOW AN ORDER FOR FIVE THOUSAND POUNDS OF NITRATE FROM WESTINGHOUSE AND IS PREPARED TO BUY REQUIRED EQUIPMENT FROM HIS OWN FUNDS. ACCORDINGLY YOU NEED NOT NOW TAKE ANY ACTION CONCERNING EQUIPMENT FOR NITRATE PRODUCTION

SZILARD

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LONG NBN18 111 DL=UG CHICAGO ILL MAR 20 1000A

DR LEO SZILARD=

DEPT OF PHYSICS COLUMBIA UNIVERSITY=

TO CLARIFY RESPONSIBILITIES PLEASE INFORM MEMBERS TODAY'S CONFERENCE THAT ON LARGE SCALE ORDERS I AM AUTHORIZED TO REQUEST MATERIALS TO ANY DESIRED SPECIFICATIONS. MURPHREE AUTHORIZED PLACE CONTRACTS FOR MATERIAL SPECIFIED. SZILARD IN CHARGE ENGINEERING LIASON SHOULD RECOMMEND TO ME APPROPRIATE SPECIFICATIONS OR EQUIVALENT AS BASIS FOR PURCHASE. COUNSEL OF SPEEDING AS CHEMISTRY CHIEF, OF FURMAN HOFFMAN AND RODDEN AS RESPONSIBLE FOR VARIOUS

ASPECTS OF CHEMICAL DEVELOPMENT OF WIGNER AND CREUTZ AS TYPICAL USERS OF PRODUCT, OF MARDEN REPRESENTING PRODUCER, AND OF THIELE REPRESENTING ENGINEERING WILL BE VALUABLE IN WRITING THIS RECOMMENDATION. SINCE ENGINEERING PLANS MUST BE RAPIDLY SHAPED YOUR PRESENCE CHICAGO SATURDAY AFTERNOON AND MOST OF NEXT FEW WEEKS HIGHLY DESIRABLE=

ARTHUR H COMPTON.

106 P.

CLASS OF SERVICE DESIRED	
DOMESTIC	CABLE
TELEGRAM <input checked="" type="checkbox"/>	FULL RATE <input type="checkbox"/>
DAY LETTER <input checked="" type="checkbox"/>	DEFERRED <input type="checkbox"/>
NIGHT MESSAGE <input type="checkbox"/>	NIGHT LETTER <input type="checkbox"/>
NIGHT LETTER <input type="checkbox"/>	SHIP RADIOGRAM <input type="checkbox"/>

Patrons should check class of service desired; otherwise message will be transmitted as a full-rate communication.

COPY OF WESTERN UNION TELEGRAM

March 18, 1942

Professor Arthur H. Compton
Department of Physics
University of Chicago
Chicago, Illinois

Pregel writes ~~estimate~~ cost for additional equipment to bring production capacity of nitrate up to two tons per month amounts to about \$6,750. Cost of additional equipment for converting this nitrate to oxide amounts to \$1,500. I suggest Chicago contact Pregel directly to place order and supply required priorities. All this is unsatisfactory muddling but the best we can do.

Szilard

L. H.

THE UNIVERSITY OF CHICAGO

DATE September 23, 1942

TO Compton

DEPARTMENT

FROM Szilard

DEPARTMENT

IN RE:

I am enclosing a short memorandum on the question of the relationship between research laboratories and the production units at Site X. I understand from Fermi that you wanted me to write such a memorandum.

L. Szilard

Compton

NRD
Com

THE UNIVERSITY OF CHICAGO

DATE October 7, 1942

To Mr. Leo Szilard

DEPARTMENT

FROM A. H. Compton

DEPARTMENT

~~SECRET~~

IN RE: Engineering of Bismuth Cooled Plant

In accord with instructions from General Groves, I have requested Mr. Moore to proceed at once with the engineering of a bismuth cooled power plant.

May I ask you to act as consultant to Mr. Moore on the design of this plant. One of the most useful things you could do now would be to recommend to him by Friday of this week an engineer with whom you could work to advantage and who under Mr. Moore's direction would have the immediate responsibility for designing the plant.

In accord with the directive which I have been given by General Groves, the immediate objective is to design a plant that can be ready for operation by June 15, 1943. We have in mind the dissipation of roughly 100,000 kw. This figure is, however, flexible if there should arise important advantages in a plant of larger or smaller capacity.

In case it should appear impracticable at this time to design a bismuth cooled plant to be ready by June 15, work on such a plant will cease to be of the greatest urgency. Interest in it will nevertheless continue both as a possible plant for large capacity and as a possible means of utilizing the power that is developed. Studies aimed toward such developments would be continued.

A. H. Compton

KT

cc: Mr. Moore
Mr. Allison
Mr. Doan

~~SECRET~~

CLASSIFICATION CANCELLED
Date 10/3/56
For The Atomic Energy Commission
e. l. Marshall/nck
Director, Division of Classification

G7678

Rubinson

CLASSIFIED
DATE
BY
REASON

His copy

Metallurgical Laboratory

October 9, 1942

A. H. Compton

L. Szilard

Your note concerning engineering of bismuth cooled plant, October 7, 1942.

You suggested in your note that I recommend to Mr. Moore, by Friday of this week, an engineer who could take the responsibility for designing a bismuth cooled plant and with whom I could work to advantage. I have thereupon asked Mr. Cooper to look, on my behalf, for such a man within the duPont organization. I found that Mr. Cooper was embarrassed by this request because he has already been requested by Mr. Moore to look for such an engineer on Mr. Moore's behalf. In the circumstances I am at a loss how to proceed in this matter. I also doubt that I can find a first class engineer who, in my opinion, can carry the full responsibility for designing the bismuth cooled plant and who would be willing to work under another engineer's direction, as suggested in your letter.

Frankly I am uncertain whether or not I am able to accept the assignment of acting as a consultant to Mr. Moore on the design of this plant. I wish however to discuss this matter with Wigner, Christy, Young, Creutz and Anderson before giving you my final decision.

While I see very strong reasons against putting all our eggs in one basket, and have Mr. Moore responsible for the development of three different types of plants on the ground that one of these three jobs is about as much as a man can tackle, I realize that you might have some very strong reasons overriding this consideration. If so, I would very much like to learn of those reasons before I proceed further with this matter.

L. Szilard

November 12, 1942

A. H. Compton

L. Szilard

I am enclosing a collection of documents which you might find useful, if it is desired to make a more thorough investigation of my background in connection with the work of our project. This collection of documents does not give the full history and was selected rather from the point of view of describing the attempts which we made to keep our work secret.

Any investigation, if limited to this country, could go back for 10 years, since I first came to this country in 1931. Although I did not reside here without interruption for more than 5 or 6 years. The following is a list of persons who have had some knowledge of the background of our present work and who had known me for a long period of time:

E. P. Wigner, Metallurgical Laboratory, University of Chicago. (He has known me intimately for 20 years).

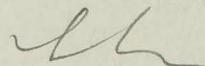
Dr. B. ^{le}Leibowitz, president of the Trubanizing Process Corp., Empire State Bldg., N. Y. Dr. ^{le}Leibowitz has known me intimately since 1932. I approached him in February 1939 and told him of the importance of the discoveries concerning uranium for national defense. It was through his generosity that Fermi and I had radium available for our experiments in 1939.

Professor Albert Einstein, Princeton. He has known me for 20 years, and I was in close contact with him between 1922 and 1932 in Germany. Prof

Professor Edward Teller, Metallurgical Laboratory, Univ-

ersity of Chicago, has known me intimately since 1933, and I was in close touch with him during my stay in England from 1933 to 1938.

If it should be desirable to extend the investigation to England, I should be very glad to give a list of those institutions and persons with whom I was most closely associated during my stay in England from 1933 to 1938.



L. Szilard

ATTEMPTS AT SECRECY FROM MARCH 1939 TO JUNE 1940

L. Szilard

November 4, 1942

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Agreement about Secrecy

Immediately after Fermi and I observed the neutron emission of uranium early in March 1939 I made a request to G. B. Pegram to withhold the publication. This was opposed by a number of our colleagues. Some opposed it on the ground that we had not actually proved that a chain reaction can take place and that they did not believe that this would be the case. Others opposed it on the ground that even if a chain reaction did take place, it was doubtful if explosions could be brought about. Still others opposed it simply on the ground that it was not customary to withhold publication of scientific discoveries. At a meeting between Fermi, Teller and myself held in Washington on March 19, it was, however, decided that we would ask that the publication of our papers be withheld. Fermi was entrusted with the execution of this decision and he returned to New York and arranged with G. B. Pegram to hold up our papers in the Physical Review.

First Approach to the United States Government through Fermi

Informed of our discoveries, E. P. Wigner came to New York and strongly appealed to us immediately to inform the United States government of these discoveries. At his insistence G. B. Pegram tried to telephone Edison, then Under Secretary of the Navy. He failed to reach him but he arranged with someone else in the Navy Department that a conference would be called at which Fermi could inform the government of these discoveries. This conference took place about March 17th or 18th in Washington but it did not lead to definite conclusions. One of the participants at this conference was Ross Gunn of the Naval Research Laboratory.

Attempts At Secrecy-March 1939-June 1940

November 4, 1942

It was realized by some of my colleagues and myself in January, 1939, that a chain reaction may be possible in uranium and that this would have important military applications. In the eighteen months that followed a few of us were engaged in a struggle to persuade our colleagues and the United States government of the necessity of keeping this subject secret. The following is a short account of that struggle illustrated by letters and telegrams exchanged between various physicists and various persons and the White House.

The approach to the U. S. government was broader in its scope than the question of secrecy alone and we asked first for moral, and later on also for financial, support of research work.

extra copies

First Approach to France, Febr. 1939

About one month before Fermi and I actually observed the neutron emission of uranium I wrote to Joliot advising him of the projected experiments and suggesting that he collaborate with us in keeping any positive results secret.

The text of the letter which speaks for itself is inclosed.

COPY

c/o Liebowitz
420 Riverside Drive
New York City

February 2nd, 1939

Professor M. Joliot
Laboratoire de Chemie Nucleaire
College de France
Paris

Dear Professor Joliot:

The only reason for my writing to you this letter to-day is the remote possibility that I shall have to send you a cable in some weeks, and if that happens this letter will help you to understand what the cable is about. This letter is therefore merely a precaution, and we hope an unnecessary precaution.

When Hahn's paper reached this country about a fortnight ago, a few of us got at once interested in the question whether neutrons are liberated in the disintegration of uranium. Obviously, of more than one neutron were liberated, a sort of chain reaction would be possible. In certain circumstances this might then lead to the construction of bombs which would be extremely dangerous in general and particularly in the hands of certain governments.

It is of course not possible to prevent physicists from discussing these things among themselves, and, as a matter of fact, the subject is fairly widely discussed here. However, so far, every individual exercised sufficient discretion to prevent a leakage of these ideas into the newspapers.

In the last few days there was some discussion here among

physicists whether or not we should take action to prevent anything along this line from being published in scientific periodicals in this country, and also ask colleagues in England and France to consider taking similar action. No definite conclusions have so far been reached in these discussions, but if and when definite steps are being taken I shall send you a cable to tell you what is being done.

We all hope that there will be no, or at least not sufficient, neutron emission and therefore nothing to worry about. Still, in order to be on the safe side, efforts are made to clear up this point as quickly as possible. Experiments at Columbia University are in charge of Fermi and he will perhaps be the first to give reliable results.

Perhaps you have also thought of the same things and have contemplated or started such experiments. May be you are able to get definite results at an earlier date, which, of course, would be very valuable towards ending the present disquieting uncertainty.

Whatever information on the subject you might care to transmit by letter or cable at some later date will, I am sure, be greatly appreciated. Also, should you come to the conclusion that publication of certain matters should be prevented, your opinion will certainly be given very serious consideration in this country.

Yours sincerely,

signed: (Leo Szilard)

extra copies

Return 350
dit latex copy

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Yours sincerely,

signed: (Leo Szilard)

4

Approach to England; Last Appeal to France

On March 20, 1939, we learned that Joliot had also observed the neutron emission from uranium and had published his observations in England on March 18. He actually started on these experiments some time in January.

Great efforts were made thereupon to persuade the French and English physicists to stop publications on this subject. The negotiations were carried out by Wigner, Weisskopf, and myself. Teller tried to persuade the physicists at Columbia University to wait before publishing the outcome of these negotiations.

A telegram was sent by Weisskopf to Halban in Joliot's laboratory reminding Joliot of my letter and advising him that we were approaching the British physicists. Another telegram was sent by Weisskopf to Blackett in England suggesting that the British withhold all publications on this subject. A letter was sent by Wigner to Dirac in Cambridge, England, to the same effect. Blackett cabled to Weisskopf that the collaboration of the Royal Society could be expected, but Joliot's reply was not satisfactory. Joliot's cable pointed out that articles had appeared in the American press in February which were based on statements by Roberts in Tuve's laboratory and let the cat out of the bag. To this cable of Joliot I replied that we had in the meantime secured the collaboration of Tuve's laboratory and I urged Joliot to agree to a collaboration in this matter. The answer of Joliot to my telegram was negative.

The text of all these telegrams as well as Joliot's final letter is inclosed.

COPY OF LETTER FROM WIGNER TO DIRAC

PALMER PHYSICAL LABORATORY
Princeton University
Princeton, New Jersey

March 30, 1939

Dear Paul:

I am writing to you in a rather serious matter this time. The enclosed letter, sent by Szilard to Joliot on February 2nd is self explanatory. Experiments undertaken since that time by Fermi and by Szilard did not help to dispell the fear which prompted Szilard's letter. In realisation of the danger mentioned in this letter, all efforts are made here to delay publications relating to this subject as there could possibly enhance the danger of a grave misuse by certain powers. The papers of Szilard and of Fermi, although received by the Physical Review some time ago, are withheld from publication and it is intended that they be printed only in the form of reprints to be distributed among the most interested laboratories in England, the U. S., France and Denmark. Similar arrangements are intended for all papers on this subject by other workers in the United States.

Halban-Joliot-Kovarski's letter to Nature prompted the physicists who loyally cooperated here to inquire today by cable concerning Joliot's attitude in this matter. Bohr undertakes to communicate with Copenhagen and a cable is sent simultaneously to Blackett. The proposition made in there communications is to use for the publication of all papers, relating to this subject, the method foreseen for this purpose for workers in the U. S. and described above.

What we would like to ask you at this time is to get in touch with Blackett and to actively support him in his endeavours if you find our position to be the reasonable one.

It is my impression that there is some urgency in the matter. Although there exists apparently a great willingness for cooperation here, it is realised that the interests of the scientific workers in the U. S. may be prejudiced to some extent if America abeyed alone by the proposed procedure.

Hoping to hear from you soon and with best regards to all,

Sincerely,

(signed) Jenö

C
O
P
Y

COPY

March 31st, 1939

HANS VON HALBAN

11 RUE GUYNEMER
SCEAUX SEINE

KINDLY INFORM JOLIOT THAT PAPERS RELATING TO SUBJECT OF YOUR JOINT NOTE TO NATURE HAVE BEEN SENT BY VARIOUS PHYSICISTS TO PHYSICAL REVIEW BEFORE PUBLICATION OF YOUR NOTE STOP AUTHORS AGREED HOWEVER TO DELAY PUBLICATION FOR REASONS INDICATED IN SZILARDS LETTER TO JOLIOT FEBRUARY SECOND AND THESE PAPERS ARE STILL HELD UP STOP NEWS FROM HOLIOT WHETHER HE IS WILLING SIMILARLY TO DELAY PUBLIC* ATION OF RESULTS UNTIL FURTHER NOTICE WOULD BE WELCOME STOP IT IS SUGGESTED THAT PAPERS BE SENT TO PERIODICALS AS USUAL BUT PRINTING BE DELAYED UNTIL IT IS CERTAIN THAT NO HARMFUL CONSEQUENCES TO BE FEARED STOP RESULTS WOULD BE COMMUNICATE IN MANUSCRIPTS TO COOPERATING LABORATORIES IN AMERICA ENGLAND FRANCE AND DENMARK STOP COMMUNICATING BLACKETT AND DIRAC IN ATTEMPT TO GET COOPERATION OF NATURE AND PROCEEDINGS ROYAL SOCIETY STOP PLEASE CABLE WEISSKOPF FINE HALL PRINCETON NJ

March 31st, 1939

BLACKETT PHYSICS DEPARTMENT VICTORIA UNIVERSITY MANCHESTER

PHYSICISTS HERE HAVE SENT PAPERS TO PHYSICAL REVIEW ON SUBJECT RELATED TO HALBAN JOLIOT LETTER TO NATURE STOP AUTHORS AGREED TO DELAY PUBLICATION IN VIEW OF REMOTE BUT NOT NEGLIGIBLE CHANGE OF GRAVE MISUSE IN EUROPE STOP IT IS SUGGESTED THAT PAPERS BE SENT TO PERIODICALS AS USUAL BUT PRINTING BE DELAYED UNTIL IT IS CERTAIN THAT NO HARMFUL CONSEQUENCES TO BE FEARED STOP RESULTS WOULD BE COMMUNICATED IN MANUSCRIPTS TO COOPERATING LABORATORIES IN AMERICA ENGLAND FRANCE AND DENMARK STOP IS IT POSSIBLE FOR YOU TO OBTAIN COOPERATION OF NATURE AND PROCEEDINGS? WIGNER WRITING DIRAC STOP WEISSKOPF FINE HALL PRINCETON NJ

April 5, 1939

WEISSKOPF FINE HALL PRINCETON NJ

BIEN RECU LETTRE SZILARD MAIS PAS CABLE ANNONCE STOP PROPOSITION DU 31 MARS TRES RAISONNABLE MAIS VIENT TROP TARD STOP AVONS APPRIS SEMAINE DERNIERE QUE SCIENCE SERVICE AVAIT INFORME PRESSE AMERICAINE U FEVRIER SUR TRAVAUX ROBERTS STOP LETTRE SUIT

JOLIOT HALBAN KOWARSKY

COPY

-2-

April 6, 1939

JOLIOU
COLLEGE DE FRANCE PARIS

REPLYING YOUR CABLE WEISSKOPF STOP ROBERTS PAPERS CONCERNING DELAYED
NEUTRON EMISSION WHICH IS MUCH WEAKER THAN HE THINKS AND HARMLESS
STOP HOWEVER TUVES GROUP WAS RECENTLY APPROACHED AND PROMISED
COOPERATION STOP WE HAVE SO FAR DELAYED PAPERS IN VIEW OF POSSIBLE
MISUSE IN EUROPE STOP KINDLY CABLE AS SOON AS POSSIBLE WHETHER
INCLINED SIMILARLY TO DELAY YOUR PAPERS OR WHETHER YOU THINK THAT
WE SHOULD NOW PUBLISH EVERYTHING STOP
KINGS CROWN HOTEL SZILARD

April 8, 1939

NLT WEISSKOPF
FINE HALL PRINCETON (NJ) USA

YOUR SUGGESTION PASSED TO NATURE AND ROYAL WHO WILL SURELY COOPERATE
STOP AWAITING LETTER WITH DETAILS
BLACKETT

April 7, 1939

LC SZILARD
KINGS CROWN HOTEL NY

QUESTION ETUDIEE SUIE D AVIS MAINTENANT PUBLIER AMITIES
JOLIOU

COPY OF LETTER FROM WEISSKOPF TO BLACKETT, ENGLAND, MARCH 1939

Victor Weisskopf
University of Rochester

Dear Blackett,

I hope you were not too much upset about my telegram but I believe that you realize the great danger which would arise, if one really could construct a bomb with uranium. The probability that this is possible might be small, but the product of the probability with the graveness of the consequences is high.

I enclose here first a letter which Szilard has written to Joliot Febr. 2. Joliot has not answered this letter and we do not know Joliot's attitude to the whole situation after his recent publication. I have sent to Halban a similar telegram as to you urging him to cooperate.

Further I enclose a note which Szilard has sent to Physical Review but the publication of which is being delayed. There are other papers from Columbia sent in and kept back, which could be sent to you if the cooperation begins to work. I am also enclosing a letter from Szilard to myself which gives you further details about his experiments.

I would like tell you how far the cooperation here for delaying "dangerous" manuscripts has developed so far. We know that the group around Tve is now willing to cooperate. Lawrence is coming here on April 3rd. and we shall discuss the matter with him then. Tate (editor of Phys. Rev.) is being approached and it is suggested that authors who may send in manuscripts concerning "dangerous" neutron emissions be advised to communicate with us. We shall send you a cable when a definite procedure has been decided upon in connection with Phys. Rev.

Much love to your family.

Very truly yours

C
O
P
Y

COLLEGE DE FRANCE

Paris 19 avril 1939

Monsieur L. SZILARD
Kings Crown Hotel
420 West 116th Street
New York

Mon cher Szilard,

J'ai bien reçu votre lettre du 7 avril et votre intéressante note sur la libération des neutrons. Nous avons continué les recherches sur cette question et vous trouverez ci-joint le texte manuscrit d'une note que nous avons envoyée à Nature. Il est malheureusement trop tard pour que nous puissions ajouter en référence votre communication, cependant nous ne manquerons pas de le faire dans un article général qui sera publié prochainement.

J'étais très embarrassé en ce qui concerne l'ajournement des publications sur ce sujet, étant certainement l'un des premiers à comprendre vos raisons. Cependant vous pouvez comprendre que nous ne sommes pas, ainsi que ceux que vous avez pu prévenir, les seuls à nous occuper de cette question, et rapidement nous avons pu lire dans des publications scientifiques et dans la presse d'information, en France et à l'étranger, des articles où étaient clairement expliquées les conséquences énergétiques du phénomène en question. Ce sont les seules raisons qui ont motivé les termes de mon dernier cable. Je suis certainement d'accord avec le principe d'une entente, mais pour qu'elle soit efficace il faut qu'elle soit étendue à tous les laboratoires susceptibles de s'occuper de la question.

Je vous serais reconnaissant de bien vouloir faire part de considérations aux collègues américains que vous avez pu toucher.

Avec mes sincères salutations,

G. Joliot

COLLAPSE OF SECRECY - APRIL 1939

After Joliot's final refusal to collaborate, all my colleagues at Columbia University expressed themselves in favor of publishing our papers. I continued to take the stand that irrespective of Joliot's policy, we ought not to publish our own work. Pegram, the head of the department, was undecided. It seemed impossible to reconcile the two opposing views, and Professor I. Rabi at Columbia, who was not himself involved in this work, gave me a friendly warning that if I continued to take such an irreconcilable stand, I would probably be left without facilities for further work at Columbia. At the suggestion of Fermi, we finally agreed to leave the decision up to Pegram, the head of the department.

Having expressed our views orally to Pegram, Dr. Zinn and I put down our ^(opposing) views also in writing in the form of letters addressed to Pegram. A copy of Dr. Zinn's letter and my own is enclosed. Before we could hand over these letters, Dr. Pegram decided, after one week of deliberation, to release our papers for publication.

I informed Blackett in England, and Wigner, that the policy of secrecy has been abandoned. Wigner's reply to my communication was to urge me to advise the United States Government of the situation. A photostatic copy of his letter is enclosed.

These letters by Szilard and Zinn did not actually reach Professor Pegram since in the meantime Professor Pegram decided to release the papers for publication. The hand written originals are in my files.

L. Szilard

C
O
P
Y

March 27, '39

Dear Professor Pegram:

It seems we shall have to decide today about delaying the letter which Zinn and I sent to the Physical Review. I feel that if we delay this letter now, and if you write to Tate along the lines which Fermi suggested on his return from Washington, we may have a chance, although not a very great one, to get others to cooperate. If we publish now, we cannot ask others to withhold future, perhaps more important, papers. Zinn, I believe, is of somewhat different opinion. It seems that in the circumstances you, as head of the department, will have to take the responsibility for deciding this difficult question, one way or another. I am very sorry to have to worry you with this awkward decision, but it happens only once in a lifetime.

Yours sincerely,

Leo Szilard

These letters by Szilard and Zinn did not actually reach Professor Pegrum since in the meantime Professor Pegrum decided to release the papers for publication. The hand-written originals are in my files.

L. Szilard

C
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C
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Dear Professor Pegrum:

Dr. Szilard has shown me the note he has written concerning the publication of our letter. I dislike very much imposing on you to the extent of asking you to decide this question. However, Szilard and I do take opposite views. My opinion may be summed up as follows:

Withholding publication cannot now keep the matter from becoming generally known among physicists here and abroad. A small rumor to certain people would start them off on experiments just as quickly as a full publication.

Joliot's paper already provides them for an excuse to begin work.

Our fears apparently are not shared by the French workers and I can hardly believe that they are ignorant of the possibilities. Withholding publication can, at most, delay the discoveries we fear for some months, in which case secrecy would be impossible. On the other hand, publication would accelerate research work in several laboratories and I feel that this country will not be put on the "spot" by its research workers failing to do their job.

Finally, withholding publication sets a new and undesirable precedent among physicists.

Despite the above arguments I would be influenced a great deal by Professor Fermi's opinion. My reason for this is that he inevitably will be forced to accept the major part of blame or honor which might result from these publications. Columbia University also has a vital interest in the matter from this viewpoint and therefore I am inclined to give your opinion great weight.

W. H. Zinn

COPY OF WIGNER'S LETTER TO SZILARD

April 17, 1939

Dear Szilard:

Thank you for letting me have the news concerning the abandonment of any policy in the publication matter. I cannot help feeling, on the one hand, that this was, under the conditions, a wise decision as nothing really could be achieved in this matter. On the other hand I do feel, and I do feel it very strongly, that the U.S. Government should be advised of the situation. This is indicated, among many other reasons, by the necessity of preparing it to a possible sudden threat. Let me know, please, whether you have already taken steps in this direction and whether you intend to take some in the near future.

COLLAPSE OF SECRECY - APRIL 1939

After Joliot's final refusal to collaborate, all my colleagues at Columbia University expressed themselves in favor of publishing our papers. I continued to take the stand that irrespective of Joliot's policy, we ought not to publish our own work. Pegram, the head of the department, was undecided. It seemed impossible to reconcile the two opposing views, and Professor I. Rabi at Columbia, who was not himself involved in this work, gave me a friendly warning that if I continued to take such an irreconcilable stand, I would probably be left without facilities for further work at Columbia. At the suggestion of Fermi, we finally agreed to leave the decision up to Pegram, the head of the department.

Having expressed our views orally to Pegram, Dr. Zinn and I put down our ^(opposing) views also in writing in the form of letters addressed to Pegram. A copy of Dr. Zinn's letter and my own is enclosed. Before we could hand over these letters, Dr. Pegram decided, after one week of deliberation, to release our papers for publication.

I informed Blackett in England, and Wigner, that the policy of secrecy has been abandoned. Wigner's reply to my communication was to urge me to advise the United States Government of the situation. A photostatic copy of his letter is enclosed.

These letters by Szilard and Zinn did not actually reach Professor Pegram since in the meantime Professor Pegram decided to release the papers for publication. The hand-written originals are in my files.

L. Szilard

C
O
P
Y

March 27, '39

Dear Professor Pegram:

It seems we shall have to decide today about delaying the letter which Zinn and I sent to the Physical Review. I feel that if we delay this letter now, and if you write to Tate along the lines which Fermi suggested on his return from Washington, we may have a chance, although not a very great one, to get others to cooperate. If we publish now, we cannot ask others to withhold future, perhaps more important, papers. Zinn, I believe, is of somewhat different opinion. It seems that in the circumstances you, as head of the department, will have to take the responsibility for deciding this difficult question, one way or another. I am very sorry to have to worry you with this awkward decision, but it happens only once in a lifetime.

Yours sincerely,

Leo Szilard

These letters by Szilard and Zinn did not actually reach Professor Pegram since in the meantime Professor Pegram decided to release the papers for publication. The hand-written originals are in my files.

C
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P
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L. Szilard

C
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P
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Dear Professor Pegram:

Dr. Szilard has shown me the note he has written concerning the publication of our letter. I dislike very much imposing on you to the extent of asking you to decide this question. However, Szilard and I do take opposite views. My opinion may be summed up as follows:

Withholding publication cannot now keep the matter from becoming generally known among physicists here and abroad. A small rumor to certain people would start them off on experiments just as quickly as a full publication.

Joliot's paper already provides them for an excuse to begin work.

Our fears apparently are not shared by the French workers and I can hardly believe that they are ignorant of the possibilities. Withholding publication can, at most, delay the discoveries we fear for some months, in which case secrecy would be impossible. On the other hand, publication would accelerate research work in several laboratories and I feel that this country will not be put on the "spot" by its research workers failing to do their job.

Finally, withholding publication sets a new and undesirable precedent among physicists.

Despite the above arguments I would be influenced a great deal by Professor Fermi's opinion. My reason for this is that he inevitably will be forced to accept the major part of blame or honor which might result from these publications. Columbia University also has a vital interest in the matter from this viewpoint and therefore I am inclined to give your opinion great weight.

W. H. Zinn

COPY OF WIGNER'S LETTER TO SZILARD

April 17, 1939

Dear Szilard:

Thank you for letting me have the news concerning the abandonment of any policy in the publication matter. I cannot help feeling, on the one hand, that this was, under the conditions, a wise decision as nothing really could be achieved in this matter. On the other hand I do feel, and I do feel it very strongly, that the U.S. Government should be advised of the situation. This is indicated, among many other reasons, by the necessity of preparing it to a possible sudden threat. Let me know, please, whether you have already taken steps in this direction and whether you intend to take some in the near future.

RENEWAL OF POLICY OF WITHHOLDING PUBLICATIONS

February 1940

When by February 1940 no word reached me from the Government indicating their interest in uranium research, I sent two manuscripts on the subject of the chain reaction in an uranium/carbon system to the Physical Review. I wrote to the editor of the Physical Review asking him to withhold the publication of these papers until further notice, and simultaneously I advised Professor Einstein of the urgent need of some general policy concerning withholding publications of this nature.

Enclosed are copies of my letters to Dr. Tate, editor of the Physical Review.

Second Approach to the President of the
United States. March-April 1940

At my request, Professor Einstein sent a letter to Dr. Sachs, and Dr. Sachs forwarded Professor Einstein's letter to the President stressing the necessity of deciding upon a government policy towards this matter, and in particular, stressing the necessity of a general policy of withholding publications.

In response to Professor Einstein's letter, the President instructed General Watson to arrange another meeting.

A copy of the President's letter to Dr. Sachs is enclosed.

Third Approach to the Navy, May 1940

The second meeting held under the chairmanship of Dr. Briggs on April 27, 1942, represented some progress, insofar as I was now requested to delay the publication of my papers, whereas, up until then, my request to the Physical Review to hold up the publication of my papers was an arbitrary action on my part, and was open to criticism on the part of some of my colleagues. No general recommendation to hold up the publication of dangerous papers was however made by the Uranium Committee. Enclosed is a copy of my letter to Physical Review.

Soon afterwards, Professor Turner in Princeton wrote a paper, which, if it were allowed to publish, would have drawn attention to the importance of element 94. Fortunately Turner showed his manuscript to Wigner, and, on his advice, sent me a copy, asking me whether I saw any objection to its publication. I wrote Turner that I have, in the meantime, approached Urey with the request of bringing about the general policy of withholding publication and asked Turner to delay the publication of his paper.

I suggested to Urey that some committee should be formed under his chairmanship to deal with the requirement of secrecy, and that this committee should include G. Breit, in order to secure the adherence of the Physical Review to the policy of secrecy which may be worked out.

In order to have government sanction for Urey's committee, I introduced Urey to Dr. Sachs, and asked Dr. Sachs to introduce Urey to Admiral Bowen, who, in the meantime, ^{had taken} took over the Naval Research Laboratory. Urey and Sachs visited Admiral Bowen, and Urey's appointment as the chairman of a committee followed.

The committee met under Urey's chairmanship in Washington on June 13, 1940. A general policy of withholding publication was formulated at this meeting in which G. Breit participated. Breit arranged with the Physical Review a practical method for establishing a sort of censorship in execution of the policy formulated at the meeting. After June 13, 1940 papers dealing with uranium were subject to "censorship".

I enclose copies of my letters to Turner and Breit, and a copy of Urey's letter to me, in which he reports on the result of his contact with Admiral Bowen. Urey's letter is a form letter sent with identical texts to some seven men, the members of one of the project ^{ed} committees.

UNDER
KNOTT MANAGEMENT

TELEPHONE
UNIVERSITY 4-2700

Not sent

King's Crown Hotel



420 WEST 116TH STREET
NEW YORK

OPPOSITE COLUMBIA UNIVERSITY

January 30, 1940

Lewis L. Strauss
52 William Street
New York City

Dear Mr. Strauss:

This is to remind you that about a week ago we thought it might be a good plan for me to talk to Godowski and others. If you wish to arrange something for me I could keep appointments this week at twenty-four hours notice. If your secretary telephones the King's Crown Hotel the clerk will tell him if I am in town or at Princeton, and in the latter case, I can be reached there at the Nassau Tavern.

I have looked more closely into the question of driving naval vessels with an atomic engine and I am enclosing a memorandum on the subject which we might use as a starting point for further deliberations.

Is it possible for you to see me some time during the second half of this week or early next week?

Yours very sincerely,

Leo Szilard

UNDER
KNOTT MANAGEMENT

TELEPHONE
UNIVERSITY 4-2700

Kings Crown Hotel



420 WEST 116TH STREET
NEW YORK

OPPOSITE COLUMBIA UNIVERSITY

MEMORANDUM

I have found a way to maintain a chain reaction and ways to use it producing a power, for instance, for the purpose of driving naval vessels. The crew of the vessel can be protected against irradiations emanating from the atomic engine by means of water tanks of rather moderate size. About ten tons of uranium might be used for such an engine.

Whether it is a rather rare isotope or the abundant isotope of uranium which is possible for the reaction is not known. If it is the rare isotope then ten tons of uranium would **supply** as much power as about fifty thousand tons of coal before the atomic engine gets . If it is the abundant isotope which splits then ten tons of uranium will **supply** as much power as five million tons of coal and even then would use up only about one fifth of the uranium so that the rest could be reconditioned.

The question could be decided after investigating a small sample of isotopes.

not sent

Third Approach to the Navy, May 1940

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I enclose copies of my letters to Turner and Breit, and a copy of Urey's letter to me, in which he reports ~~on~~ the result of his contact with Admiral Bowen. Urey's letter is a form letter sent with identical texts to some seven men, the members of one of the project ^{ed} committees.

EARLY EMPHASIS ON THE GRAPHITE-URANIUM SYSTEM

July to October 1939

Enclosed are copies of letters sent to Fermi in July 1939 and of a memorandum submitted to Dr. Briggs in October 1939. This memorandum puts on record the recommendations which I made orally at the first meeting of the Uranium Committee, under the chairmanship of Dr. Briggs, on October 21, 1939.

The University of Chicago

Metallurgical Laboratory

March 26, 1943

MIDWAY 0800
EXT. 1290

Mr. A. H. Compton, Director, Metallurgical Laboratory:

I have informed the Metallurgical Laboratory's representative fully with regard to ideas and inventions dealing with the production and utilization of the fission chain reaction which I consider patentable and which were developed by me previous to my employment by the University of Chicago. Such information is given in . I have not made patent applications dealing with this subject except as follows.

I agree to assign to the University of Chicago all patent rights dealing with the fission chain reaction and its use that have been made by me since my employment by the University of Chicago as of Feb. 1, 1942, and until my employment by the University of Chicago shall terminate.

Signed _____

Date _____

THE UNIVERSITY OF CHICAGO

DATE March 26, 1943

TO Mr. Leo Szilard

DEPARTMENT

FROM Mr. A. H. Compton

DEPARTMENT

IN RE: Terms of Appointment

Upon receipt of your signature to the attached statement, I am authorized to renew your appointment as research associate at the University of Chicago from January 1, 1943, at a salary of \$950.00 per month. This will cover all compensation other than the expenses for travel on laboratory business.

Will you kindly return a copy of this memorandum with your signature indicating your acceptance so that the appointment can be put into effect.

Arthur H. Compton

Accepted,

Date, _____

THE UNIVERSITY OF CHICAGO

DATE March 26, 1943

To Mr. Leo Szilard

DEPARTMENT

FROM Mr. A. H. Compton

DEPARTMENT

IN RE: Patent Compensation

In response to your memoranda of December 4 and 29, 1943, I am asked to make the following statement with regard to a possible basis for compensation to you for inventions connected with the processes being developed in this laboratory.

"The usual procedure when an individual has a patent which he feels may be of service to the United States Government, where the subject matter has possible connection with the war effort, is for him to file an application. Such an application will be handled in the usual way by the Patent Office. However, if it is considered that the subject matter should be kept secret in connection with the war effort, the Commissioner of Patents can do so under Public 700. The inventor then has the opportunity of offering his invention for the use of the United States Government, and if he does so the contents of his application can be made available to government officials concerned with the matter."

With regard to compensation I am informed that, if the government utilizes an invention that has thus been offered to it, the inventor is entitled under the law to certain compensation for its use, which compensation is, I understand, set by the Court of Claims. The above procedure appears to be the only established method of securing from an authorized body the determination of the compensation to which you would be entitled.

Dr. Bush does not understand that he has the legal right to substitute a method of evaluation of your appropriate compensation such as you suggest for that already set up by law. He is willing, however, to see if some procedure can be set up which will accomplish the same purpose if he can be satisfied with regard to the following points:

1. I have informed Dr. Conant and Dr. Bush that I understand that you have not gone through any of the procedure described above, including application for United States patents dealing with the problems with which our laboratory is concerned, by which you can claim compensation according to the established routine. Is this understanding correct?

2. Are we correct in assuming that the inventions for which compensation is sought are only those dealing with processes with which our laboratory is concerned but made previous to your employment by the University of Chicago?

3. Dr. Bush notes further, "If Dr. Szilard has disclosed to you all of these inventions made before entering the employ of the University, I judge that this was done at the time he also entered into an agreement in regard to the assignment of subsequent inventions, and the fact that he had made prior inventions in the field was specifically recorded, giving their extent, in order that the relations with the University upon entering its employ might be

Mr. Leo Szilard

Page - 2 -

might be entirely clear. This is the usual procedure, of course, in any case where a man enters into an agreement to assign patents in a field, and has previously invented in the same field. If you have such a record I would like to know of it."

As far as I am aware, you have no patent applications in the United States dealing with the problems with which our laboratory is concerned. You have informed us of the ideas that might constitute inventions which you had developed previous to your employment by the University of Chicago. One such statement is given in report A-55. Is this a complete statement, or are there others?

In order to place these matters in satisfactory form, I should consider that your signature to the following statement would be adequate:

"Mr. Compton, Director, Metallurgical Laboratory:

I have informed the Metallurgical Laboratory's representative fully with regard to ideas and inventions dealing with the production and utilization of the fission chain reaction which I consider patentable and which were developed by me previous to my employment by the University of Chicago. Such information is given in .
I have not made patent applications dealing with this subject except as follows .

I agree to assign to the University of Chicago all patent rights dealing with the fission chain reaction and its use that have been made by me since my employment by the University of Chicago as of 1942, and until my employment by the University of Chicago shall terminate.

Signed _____

Date, ."

Attached is a memorandum of appointment which I am authorized to put into effect upon receipt of your signature to this statement.

Dr. Bush has noted particularly your desire that the proceeds arising from your early activities in invention in this field should in some way further scientific research, and that Mr. Fermi wants Columbia University in particular to receive appropriate benefits. He Notes,

"This, of course, can be considered entirely apart from the relations to government in any case in which an individual has patent rights which belong to him personally, and if this is the case in the present instance either Dr. Szilard or Dr. Fermi can approach the subject quite independent of any action by me."

He calls attention to what Dr. Cottrell has done in connection with the Research Corporation of New York as a suggestion.

I hope that this statement may clarify your situation.

Arthur H. Compton

Compton

~~Handwritten signature~~

November 25, 1942

A. H. Compton

L. Szilard

Compartmentalization of Information and the Effect of Impurities of 49.

We had repeatedly discussed, in an abstract way, the harmful effects of compartmentalization of information. In view of the present interest in the effect of impurities of 49 I should like to put on record for your information the following facts:

I realized this summer that the strong α emission of 49 would lead to a strong neutron emission from impurities which are expected to be present. Upon Teller's return from the summer conference in Berkeley, I went to see him and asked him whether this point had been considered and whether, in view of this fact, it would not be wise to put more emphasis on autocatalytic methods of explosion which I had discussed with him in the past. Teller replied that he personally is placing considerable emphasis on the autocatalytic method, *but that the group did not consider it as important.* Teller, as you know, is an old friend of mine and I found him occasionally embarrassed when I tried to discuss with him things which he did not feel free to discuss with me. For this reason I interpreted his reply as meaning that the situation was well in hand, and that there was no need for us to discuss it. Consequently, I changed the subject of our conversation and did nothing further in the matter. Teller, on the other hand, as it now turns out, interpreted my changing of the subject as meaning that I was going to look into this question, and that it was not necessary for him to do anything about it.

I believe this illustrates well under what strain the scientists are being put, and how compartmentalization of information poisons the discussion, even in those fields which are not explicitly excluded from discussion.

I do not believe that the question of impurities in 49 should be taken tragically, but it is a fact that if Teller and I could have talked freely, the question would have been raised three months ago, immediately following the summer conference in Berkeley.

L. Szilard

CC: E. Teller

THE UNIVERSITY OF CHICAGO

DATE March 26, 1943

TO Mr. Leo Szilard

DEPARTMENT

FROM Mr. A. H. Compton

DEPARTMENT

IN RE: Terms of Appointment

Upon receipt of your signature to the attached statement, I am authorized to renew your appointment as research associate at the University of Chicago from January 1, 1943, at a salary of \$950.00 per month. This will cover all compensation other than the expenses for travel on laboratory business.

Will you kindly return a copy of this memorandum with your signature indicating your acceptance so that the appointment can be put into effect.

Arthur H. Compton

Accepted,

Date, _____

THIS DOCUMENT HAS BEEN
TAKEN FROM A FILE OF THE
ARGONNE NATIONAL LABORATORY
AND WAS TURNED OVER TO
DR. LEO SZILARD ON

Aug. 29, 1956.

Warren C. Johnson

The University of Chicago

Metallurgical Laboratory

March 26, 1943

MIDWAY 0800
EXT. 1290

Mr. A. H. Compton, Director, Metallurgical Laboratory:

I have informed the Metallurgical Laboratory's representative fully with regard to ideas and inventions dealing with the production and utilization of the fission chain reaction which I consider patentable and which were developed by me previous to my employment by the University of Chicago. Such information is given in _____ . I have not made patent applications dealing with this subject except as follows.

I agree to assign to the University of Chicago all patent rights dealing with the fission chain reaction and its use that have been made by me since my employment by the University of Chicago as of Feb. 1, 1942, and until my employment by the University of Chicago shall terminate.

Signed _____

Date _____

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~~Aug 29~~ 1956.
Warren C. Johnson

THE UNIVERSITY OF CHICAGO

DATE April 20, 1943

TO A. H. Compton

DEPARTMENT

FROM L. Szilard

DEPARTMENT

IN RE: Patent Applications

If I understand your memo correctly, Dr. Bush might be willing to see if a satisfactory procedure can be set up for evaluating the appropriate compensation for patent rights in which the inventions claimed were made previous to my employment by Columbia University or by the University of Chicago. You mention that Dr. Bush wants to be satisfied with regard to ^{three} ~~these~~ points.

1. As you will see from the attached memo, I have no United States patent granted or United States patent application pending by which I could claim compensation according to the established routine. But even if I applied for a patent at this time, claiming compensation according to the established routine would be practically impossible. The reason is the following: There are certainly a number of patent applications in the same field and before any claims can be allowed, it would be necessary to have an interference in the Patent Office in order to determine priority. This would seem, however, at present impossible since the requirements of secrecy will prevent the Patent Office ^{from} disclosing our patent applications to the other applicants.

2. It is correct that no compensation is sought except concerning such inventions which were made previous to my employment by the University of Chicago and also previous to my employment by Columbia University.

3. My inventions which were made previous to my employment at the University of Chicago were not specifically recorded at the time when I entered into an agreement with regard to the assignment of subsequent inventions. However, with the help of disclosures contained in my private files

April 20, 1943

which are available for inspection, it would be possible for a member of the Metallurgical Laboratory to determine with reasonable certainty which of these inventions were made prior to my employment by the University of Chicago and which were made subsequent to that date.

Since claiming compensation by the established routine will hardly be possible, it would be desirable to follow some other procedure. I ^{personally} would nevertheless, feel reluctant to ask Dr. Bush to concern himself with matters of this nature at the present time seeing that I myself was reluctant to give time and attention to patents as long as I had an opportunity to do work which I felt was of more direct usefulness in connection with ^{our} ~~the~~ Project.

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DR. LEO SZILARD ON

Aug. 29, 1956.
Daven C. Johnson

THE UNIVERSITY OF CHICAGO

DATE

TO A. H. Compton

DEPARTMENT

FROM L. Szilard

DEPARTMENT

IN RE:

In your memo dated March 26, you mentioned that Dr. Bush would like to be satisfied with regard to the following questions.

1. Whether I have no patent application pending in the U. S. Patent Office by which I can claim compensation according to the established routine.

The answer to this is the following: I have not applied for any patent in the United States after April 1, 1939. Of such patents for which I have applied in the United States prior to that date and which dealt with the problems of a chain reaction or which contained references to the possibility of a chain reaction, these references were deleted or the patent withdrawn so that I had no United States patent application connected with the problem of chain reaction pending at the time I entered into the employment of the University of Chicago on February 1, 1942. Consequently, there is no patent application pending by which I can claim compensation according to the established routine.

For the sake of completeness I wish to add that I made only one foreign application dealing with the subject of the chain reaction. This application resulted in a secret British patent which I assigned to the British Admiralty in 1936.

2. Whether the inventions for which compensation is sought are only those dealing with chain reactions made previous to my employment by the University of Chicago.

The answer is: yes.

3. In this point, you raise the question of the desirability of having a complete statement of inventions which I made prior to my employment by the University of Chicago. A list of such inventions was submitted by me to Mr. Blair at his request in a letter dated September 4, 1942. While this list is not complete, it could perhaps be made complete at the expense of a few days work by going through my private records in which previous disclosures are collected.

THE UNIVERSITY OF CHICAGO

DATE April 20, 1943

TO Mr. Compton

DEPARTMENT

FROM Mr. Szilard

DEPARTMENT

IN RE:

of March 26th
Your memo touched upon the question ^{that} there is no record of my inventions which were made prior to my employment at the University of Chicago. I wonder whether you would like me to go with Dempster through my private records and go through the disclosures contained therein for the purpose of preparing a list of these inventions. I believe it could be determined with reasonable certainty which inventions I made prior and which inventions I made subsequent to my employment here.

L. Szilard

KT

LS:

*This seems to me most desirable.
Discussion with Dempster may clear
the situation in this regard*

4/20/43

A.H.C.