

~~TOP SECRET~~

153 pages

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UNITED STATES
ATOMIC ENERGY COMMISSION
OAK RIDGE, TENNESSEE

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This document has been reviewed and it has been determined that it does not contain Restricted information as defined in the Atomic Energy Act of 1954.

H. F. Carson
Chief, Declassification Branch
8-24-61

54. *H. J. Cavall*
Chief, Declassification Branch
8-24-61

DECLASSIFIED

Authority UK NOTE, 24 FEB 92
By JS/HR-m, ESPA, Date 2/25/92

~~TOP SECRET~~

To Lieut.-Col. M. ...
and Lieut.-Col. M. Welsh.
From Major T.H. Pittner.

TOP SECRET

OPERATION "EPSILON".

I PREAMBLE.

1st May 1945.

I received at H.Q. from Lieut. Cdr. WELSH instructions to proceed to RHEIMS (France,) to report to G2 SHAERF and collect party of German Scientists. A Chateau at SPA (Belgium) had been prepared for their detention. A number of distinguished British and American Scientists would be visiting them in the near future and my instructions were that these Germans were to be treated as guests. No one, repeat no one, was to contact them except on instructions from H.Q.

II. RHEIMS (2nd - 7th May.)

2nd May 1945.

I proceeded by air to RHEIMS and reported to SHAERF. I was informed by Major KEITH, P.A. to A.C. of S. G2 that the Chateau at SPA was no longer available and that the party was to be held at RHEIMS at 75 Rue Gambetta until other arrangements could be made.

Arrangements had been made to draw American "A" Rations ready cooked and a staff of two British Orderlies and an American cook had been provided by SHAERF in addition to the necessary guards.

The same evening, the following arrived at 75, Rue Gambetta, escorted by Major FURMAN, U.S. Army:-

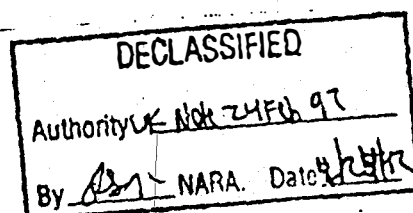
Professor	HAHN.
"	VON LAUE
Doctor	VON WEISZACKER.
"	WIRTS.
"	BAGGE.
"	MORSHING.

Professor KATTAUCH, whom I had been told to expect, was not among the party.

The professors were friendly and settled down well. They expressed appreciation of the good treatment they were receiving and a very pleasant atmosphere prevailed. At my request they gave me their personal parole not to leave the house or the portion of the garden which I allotted to them.

3rd May 1945.

The following day I telephoned H.Q. (Lieut. Cdr. WELSH) and informed him of the situation regarding SPA. In the morning I was informed by SHAERF that arrangements were being made to accommodate the party at a Chateau at VERSAILLES where the original policy regarding these detainees could be carried out. I met CALVERT and explained the situation to him.



REPRODUCED AT THE NATIONAL ARCHIVES
TOP SECRET

-2-

5th May 1945.

I was asked by SHAEF H.Q. Commandant to release the Allied Personnel who were required in connection with the impending VE Day negotiations and who, in any case had shown some reluctance to wait on Germans. I pointed out that it was essential for me to have staff for this purpose and it was suggested that I take on German P.W. It seemed to me that this would solve the staff problem and I accordingly agreed and acquired from the RHEIMS P.W. stockade, a German P.W. waiter and a cook, but stipulated that these men would have to remain with me as long as the Professors were detained.

The professors were by this time beginning to get restive and they were particularly worried about their families. They asked permission to write letters and after referring the matter to H.Q. (Lieut. Cdr. WELSH) and obtaining sanction, the letters were written and, after being censored by me, were handed to General STRONG's secretary (Jun. Cmdr. FRAZER) at SHAEF for transmission.

7th May 1945.

SHAEF informed me that arrangements had been made to accomodate the party at VERSAILLES and that H.Q. had agreed to the move. A Dakota was put at our disposal and the party took off at 1700 hours in the expectation that at last the long awaited contact with their British and American colleagues was about to take place.

III. VERSAILLES (7th - 11th May.)

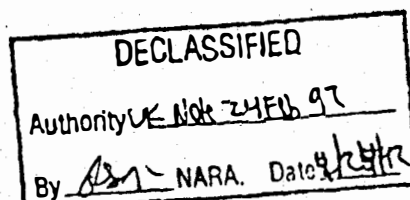
On arrival at VERSAILLES, I reported to G2 SHAEF and found that the party was to be accomodated in a detention centre known as "Dustbin" at the Chateau du CHESNAY. This centre had been set up for the purpose of interrogating German NAZI Scientists and Industrialists. The conditions were most unsatisfactory from my point of view as complete segregation was impossible and there was great danger of undesirable contacts being made with the professors. In addition, only camp beds were provided and there was scarcely any other furniture. The food was the ordinary P.W. rations. It was obviously impossible to carry out my mission in these surroundings but I was able to pacify the professors who accepted the situation with as good a grace as possible and I promised to do my best to get them moved as soon as possible. The Camp Commandant did his best to make them comfortable.

8th May 1945.

In spite of the general holiday atmosphere at SHAEF and in LONDON consequent upon the declaration of VE Day, I managed to contact H.Q. (Lieut. Cdr. WELSH) by telephone and explain the new situation. He told me to contact Major FURMAN, U.S. Army, in PARIS and try and make other arrangements through him. This I did and we decided to try and get the party back to the rue Gambetta at RHEIMS.

9th May 1945.

Major FURMAN informed me that he was arranging for us to return to RHEIMS and that in the meantime the following Germans were



TOP SECRET

-3-

to join the party:-

Professor HEISENBERG.
Doctor DIEBNER.

The situation at the Chateau du CHESNAY was becoming more and more difficult as the professors were highly indignant at being treated as "war criminals" as they put it; Professor von LAUE was almost in tears. In spite of the fact that other German Scientists including Professor OSENBURG were in the house, and were being interrogated by British and American Officers, I was able to prevent the identity of my party being revealed. I had refused to submit a nominal roll or to allow any contact with them. Dr. ROBERTSON, Scientific Advisor to SHAEF did, however, see Professor von LAUE out for exercise and spoke to him, but I was able to persuade him to break off the conversation and he accepted the situation well.

10th May 1945.

The professors were becoming more and more restive and they begged me to contact Professor JOLIO in PARIS whom they assured me would help them. This request was of course refused and I told them they must have patience and that everything possible was being done for them.

In order in some way to alleviate conditions I took them in parties by car to VERSAILLES to see the gardens and Palace. On one occasion a guide asked for their identity cards in order to visit the Hall of Mirrors and we left the premises hurriedly having pleaded a previous engagement.

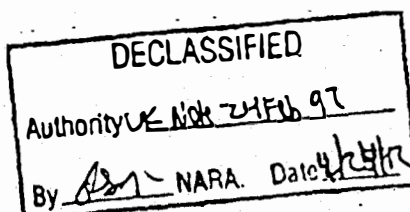
11th May 1945.

It was now clear that the difficulties which had arisen were due mainly to an order issued by the Supreme Commander stating that no preferential treatment was to be given to any captured German nationals. This order was given after reports had appeared in the press describing the good treatment being meted out to Reichsmarschal GÖRING.

General STRONG refused to agree to my party returning to REIMS but arrangements were made by MIS, on the instructions of Brig. General CONRAD, to accommodate the party for a short time at a villa at LE VESINET, near ST. GERMAIN. The professors were overjoyed at the prospect of leaving what they called the concentration camp and after I had inspected the villa, I left VERSAILLES with the party in command cars on the evening of the 11th May after informing H.Q. by cable of the arrangements which I had made.

IV. LE VESINET (11th May - 4th June.)

The Villa Argentina, 89 Alee du Lac Inferieure at LE VESINET was a large house standing in its own grounds. MIS provided a guard and arranged for us to draw American "B" rations in a semi-cooked condition from their mess. They also supplied us with canteen goods. During our whole stay at LE VESINET, MIS gave me every possible assistance.



The professors were delighted with their new surroundings and the old atmosphere of cordiality quickly returned. There was some trouble with the plumbing and electric light in the villa which had been empty for some time and the professors all helped to remedy the defects. When outside help was necessary, such as on an occasion when the basement was flooded owing to a burst pipe, they were confined to their rooms whilst a very voluble and inquisitive French plumber dealt with the matter.

On the evening we arrived, Major FURMAN brought Professor HARTECK to join the party. As the party had now grown from six to nine, I asked the professors to renew their parole which they did.

13th May 1945.

As we could only have the use of the villa for a very limited period, I cabled H.Q. through Colonel Robin BROOK urging that efforts be made to bring the party to England as it was obvious that it would not be possible to arrange accommodation on the continent suitable for carrying out my mission.

There was considerable speculation amongst the U.S. troops and the French civilian population regarding the identity of the party. I was accused of harbouring Marshal Petain. A number of inquisitive people including the owner of the villa who came post haste from PARIS when he heard from the concierge that his house was being occupied, were dealt with. I was able to spread the story that my party consisted of active Anti-Nazis who were being kept by us for their own protection.

The information, inadvertently let out by Major FURMAN, that French Colonial troops were still in occupation at RECHINGEN and TAILFINGEN caused consternation amongst the professors who had been told that American troops would be taking over. Professor HEISENBERG asked permission to write a letter to his friend Dr. GOUDSMITH of the U.S. Army, who he believed was in PARIS, asking him to get news of the families. On receipt of a cable from Mr. PERRIN sanctioning this, I handed the letter to Dr. GOUDSMITH who offered to do what he could. He subsequently gave me a letter from Professor HEISENBERG's wife which I handed to him for which he was duly grateful.

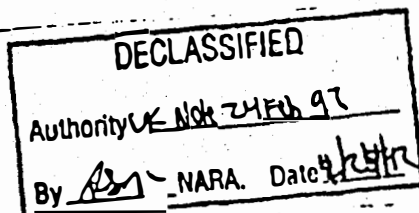
16th May 1945.

Major GATTNER was sent by Mr. PERRIN to get some information from Professor HARTECK and Dr. WIRTZ regarding the whereabouts of certain apparatus. I was present at the interview. All questions were answered.

17th May 1945.

Brig. General CONRAD came to the villa and I showed him over. He did not speak to any of the professors. He expressed his satisfaction with the arrangements that had been made and agreed that the "B" scale of rations should continue although MIS wanted to reduce them to the "C" scale which was that authorised for P.W. On the following day, however, the rations were cut without warning and I protested to Colonel FORD the C.O. of MIS who eventually agreed to restore the original scale.

Major FURMAN sent Lieut. DIETESHEIM, U.S. army, to ask Professor HARTECK about certain apparatus at CELLE. I was present at the interview.



REPRODUCED AT THE NATIONAL ARCHIVES
TOP SECRET

-5-

The professors spent their time in LE VESINET working in their rooms or sun-bathing in the garden. They developed a passion for physical exercise and even the more aged Professors von LAUE and HAHN could be seen running solemnly round and round the garden at six o'clock in the morning clad only in thin underpants. On Tuesdays and Fridays they assembled in the common room to hear a lecture by one of themselves. I was able to supply them with books, technical journals, and games.

During this time, Major FURMAN was endeavouring to find suitable permanent accommodation. He had obtained a letter from Brig. General BETTS, D.A.C. of S. G2 SHAEF asking all concerned to assist in finding accommodation for the party. He informed me that he had found a Chateau near LIEGE (Belgium) and I arranged to inspect it.

20th May 1945.

I received a cable from V.C.S.S. informing me that WASHINGTON had been asked to agree to the professors being brought to England, and I replied stating that I proposed to inspect the Chateau in Belgium, and asking for instructions pending a decision from WASHINGTON. V.C.S.S. replied telling me to proceed as though I knew nothing about these negotiations.

25th May 1945.

I flew to LIEGE with Major FURMAN to inspect the Chateau de FACQUEVAL near HUY. Lieut. Colonel WATKINS, U.S. Army, the Area Intelligence Officer took us to the Chateau. He pointed out that the administration would come under the local American Military Authorities and that it would have to be strictly in accordance with General EISENHOWER's order regarding treatment of enemy nationals. Apart from this, the security appeared unsatisfactory as there were Belgian civilians working on the estate and I was also informed that the political situation was very tense and that serious disturbances were expected. In addition, the owner of the Chateau, a very wealthy Belgian Lawyer, Mr. GOLDSCHMIT had just returned from five years as a P.W. in Germany. I spoke to him and he was naturally very distressed at having his home requisitioned. Of course he did not know the purpose for which it was going to be used but he told me he proposed to contest the validity of the requisition as the house had not been occupied by the Germans, and, according to an agreement between the Allies and the Belgian Government only such houses could be requisitioned. I checked this later and found it to be the case. He told me he was a friend of General ERSKINE, Head of the SHAEF mission to Belgium and that he intended to appeal to him. As a matter of fact, a request for de-requisition was received from General ERSKINE later, shortly before we left.

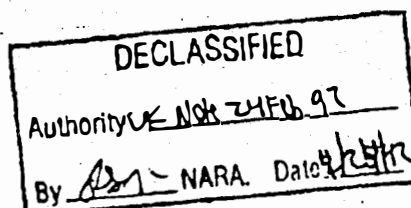
Lieut. Colonel WATKINS wanted the American guard troops accommodated in the best rooms in the house and suggested that the professors should be put in the attics. I refused to agree to this.

I reported to H.Q. (V.C.S.S.) by cable:

In the meantime MIS were pressing me to vacate the villa ARGENTINA which was urgently required to accommodate their own staff who were passing through LE VESINET for re-deployment. I saw Colonel FORD and informed him that it was impossible for us to move until other suitable accommodation had been found and assured him we were doing our best in this respect.

28th May 1945.

I received:



r. WELSH informing me

TOP SECRET

-6-

that he proposed to visit me and telephoned him arranging to meet him in PARIS on 30th May.

30th May 1945.

Lieut. Cdr. WELSH arrived and I took him to the villa. I explained the whole situation to him and arranged to take him to see the Chateau de FACQUEVAL. He was very cordially received by the professors but they were disappointed that he was unable to give them any news of their families or any information regarding their future.

31st May 1945.

Lieut. Cdr. WELSH and I flew to LIEGE and were taken to the Chateau de FACQUEVAL by Captain MUELLER, U.S. Army, Colonel WATKINS' deputy. After inspecting the house and grounds and talking to Mr. GOLDSCHMIT, we agreed that the place was unsuitable and we returned to LE VESINET.

1st June 1945.

A conference took place at Major FURMAN's office in PARIS at which Major CALVERT was present. Lieut. Cdr. WELSH said that we considered the Chateau de FACQUEVAL unsuitable and that we were trying to get sanction to take the party to England where suitable accommodation was available. It was agreed that efforts should be made to remain at LE VESINET pending a decision on this point and Major FURMAN proposed sending a cable to General GROVES which was drafted. I understand that after I left the conference it was decided not to send this cable. Lieut. Cdr. WELSH then returned to LONDON.

I saw Colonel FORD at MIS who informed me that the Villa ARGENTINA was required immediately for a party of WACS and after some discussion he agreed to put other accommodation at our disposal for a few days.

3rd June 1945.

Major FURMAN told me that the party were to move at once to Belgium on the orders of Brig. General CONRAD. I refused to move before Monday 4th June and telephoned H.Q. (Lieut. Cdr. WELSH) who confirmed that the move should take place.

It was not possible to arrange air transport and MIS provided two command cars with trailers and a saloon car for the journey.

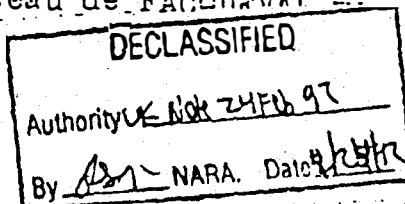
4th June 1945.

A movement order was obtained from Colonel FORD and we left LE VESINET at 1300 hours on 4th June and arrived at the Chateau de FACQUEVAL at 2345 hours.

During the whole of my stay in France I received valuable assistance from Colonel BROOK and his staff.

V. HUY (4th June - 3rd July.)

Although Major FURMAN had assured me that the arrangements he had made at the Chateau de FACQUEVAL were in accordance with the



TOP SECRET

-7-

agreed policy, I found on arrival that this was not the case. Only P.W. rations were available and no provision had been made for a meal for the professors who had been travelling since midday. Fortunately I had brought American "K" rations which we had eaten by the roadside.

Captain DAVIS, U.S. Army, had been temporarily placed in command pending the arrival of Lieut. TOEPEL of the A.L.S.O.S. Mission who had been appointed to command the unit. Mr. OATES, an American C.I.C. man was also attached to the unit. These officials did everything in their power to help me.

It was pointed out to me that the American troops would object to any signs of fraternisation and that I would not be allowed to provide any extra food or comforts for the professors. As a matter of fact I did later provide additional food and drink with the connivance of the American Officer in charge, but without the knowledge of the American G.I.s

5th June 1945.

I received a cable from H.Q. (Lieut. Cdr. WELSH) stating that the whole future policy regarding the professors were being examined and that I was to use all my endeavours to keep them in a good frame of mind pending a decision.

In view of the attitude of the American troops it was impossible for me to live with the professors as I had done up to now. Ordinary "A" rations were drawn for the Officers and troops, whereas only P.W. rations were drawn for the professors, and two separate messes had to be set up. I reported the unsatisfactory position to Lieut. Cdr. WELSH at H.Q.

The professors had no alternative but to accept the position but they were getting to the end of their tether. They had been promised contact with British and American Scientists and had been assured that full provision was being made for their families. They could not understand why they were being treated in this way. I explained to them some of the difficulties that had arisen and was able to reassure them and keep them reasonably happy.

X | The routine at the Chateau was much the same as it had been at LE VESINET and, the weather being mainly fine, the professors spent most of their time in the garden. The guard troops had been provided with a piano and as they rarely used it, I persuaded them to give it to the professors. This instrument was in a very bad condition, a number of notes were missing, but it did not take them long to take the whole thing to pieces and repair it with improvised tools. I borrowed a local piano tuner's kit and they soon had it tuned. I also bought a wireless set which proved a very welcome addition to the amenities of the house.

Speculation as to the identity of the professors was as great in Belgium as it had been in France. The most popular guess was that the party consisted of von RIBBENTROP and his staff. There was considerable danger to security owing to the fact that the American troops, who were not trained in intelligence work, mixed freely with the village girls. They also made nightly trips to LIEGE. There were three Belgian civilians engaged as cooks etc. for the mess and these people could not be confined to the premises.

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By AS NARA Date 4/1/97

TOP SECRET

-3-

Lieut. Colonel WATKINS insisted upon the establishment being run as an American Military Station, he even wanted the Stars and Stripes flown from a flag staff in the grounds; this suggestion I vetoed. The Chatcau was officially designated "Special Detention Centre, Area No. 5., Channel Base Section, ETUSA" and this had to appear on all correspondence and requisitions. This drew attention to the nature of the establishment and there was the obvious danger of Swiss or Red Cross representatives claiming the right of entry.

9th June 1945.

The professors were very worried when they read in the newspapers that the Russians were extending their zone of occupation in Germany. Dr. DIEBNER was frantic as it appeared that the town of STADTLIN (Thuringia) where his wife and son were, was to come under Russian Occupation. He begged me with tears in his eyes to get his wife and son moved into the British or American zone. I pointed out that his previous activities hardly warranted our doing him a favour but said I would see what could be done. In the meantime Professor HEISENBERG had told me that Mrs. DIEBNER had worked with her husband and knew about all his work and that of the others and he thought it would be unfortunate if she fell into Russian hands. I consequently cabled this information to H.Q. with the request for the family to be moved. During the next few days Dr. DIEBNER showed signs of mental aberration and threatened first to attempt to escape and when he realised that this was impossible, he threatened to commit suicide. It was a great relief when I was able to inform him that his family had been moved to NEUSTADT Nr. COBURG. The receipt of this news moved him to such an extent that he asked to be taken to Church although he admitted that he had no religion and had not been inside a church for many years. I took him to the village church to mass the following Sunday where he caused a sensation by appearing dressed up as though for a Church parade.

10th June 1945.

Lieut. TOEPFEL arrived to take over command of the unit. This Officer was an A.L.S.O.S. man and had been present at HECHINGEN and TAILFINGEN when the professors were taken into custody. He knew those who came from there and they recognised him.

Lieut. TOEPFEL handled a difficult situation very well indeed, co-operating in every way and turning a blind eye to my fraternisation whilst maintaining his position as O.C. of the troops.

14th June.1945.

Professor GERLACH was brought from PARIS to join the party. The professors were delighted to see their old colleague.

15th June 1945.

By this time the professors were again becoming very, very restive and they hinted to me that the time might soon come when they would take desperate measures to let the world know of their situation. They did not say what action they contemplated but said they would give me due warning. They showed a certain loyalty to me personally as they appreciated what I had been able to do for them. They assured me that they would not break their parole without withdrawing it. I had a long talk with Professor HEISENBERG who is the most sensible of them and he told me that their main

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REPRODUCED AT THE NATIONAL ARCHIVES
TOP SECRET

-9-

worry was the lack of information about their families. He also said that they suspected that their potential value was being judged by the documents found at their institutes. He said that these did not give a true picture of the extent of their experiments which had advanced much further than would appear from these documents and maintained that they had advanced still further as a result of pooling of information since their detention. He begged for an opportunity of discussing the whole matter with British and American Scientists in order to acquaint them with their latest theories and work out a scheme for future co-operation. Professor HEISENBERG and Dr. HARTECK suggested that Professor BONHOEFFER of LEIPZIG who they believed was at FRIEDERICHSDRUM in the OSTHARZ should be brought to join this party. They said he was an active Anti-Nazi who had worked with them and that it would be unwise to let him fall into Russian hands. The above information was passed to H.Q. by cable.

The professors again asked to be allowed to write to their families and I said I would try and arrange for the letters to be delivered. Letters were written and after censorship which necessitated a lot of rewriting, these were handed by me to Lieut. Cdr. WELSH in LONDON.

Lieut. Cdr. WELSH told me on the telephone that permission had been given for the professors to be brought to England and he asked me to come over as soon as possible to inspect Farm Hall

16th June.

As we required additional staff, I got two more P.W. from the stockade at NAMUR, a second cook and a man who was a barber by profession. This enabled us to be more or less independant of outside domestic help. The laundry was done in the house. A group photograph was taken by Mr. OATES. (The negative and all copies of this photograph are in my possession.)

17th June.

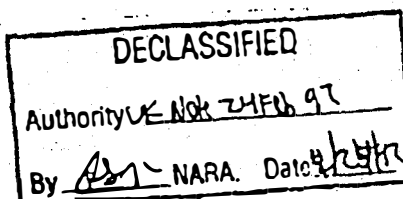
In order to get an air passage to the U.K., I had to get myself temporarily attached to a British unit stationed at BRUSSELS and I accordingly got myself attached to 21 Army Group and got an Authority from them and proceeded to LONDON.

Lieut. Cdr. WELSH and I went to Farm Hall where arrangements had already been made to instal microphones. I had asked for such an instalation from the day I took charge of the professors. We arranged with Colonel KENDRICK to transfer the necessary staff of technicians from CSDIC (U.K.) to man the installation. We were fortunate also in obtaining the services of Captain BRODIE from CSDIC (U.K.) to act as Administrative Officer.

26th June.

I returned to Belgium leaving Captain BRODIE to complete the arrangements at Farm Hall.

On arrival at BRUSSELS airport I was informed that Lieut. Colonel WATKINS was making an inspection of the Chateau de FACQUEVAL that afternoon. He was allowed to inspect only the American troops and their quarters and the professors were confined to the house during his visit.



REPRODUCED AT THE NATIONAL ARCHIVES
TOP SECRET

-10-

The professors received the news of the impending move to England with mixed feelings. On the one hand they looked on it as a step forward in that they expected to meet their British colleagues, but on the other hand England seemed much further away from home than Belgium.

Certain difficulties arose regarding the journey of the professors to England as Lieut. Colonel WATKINS insisted upon orders directing him to release them from American custody. Eventually orders were obtained in PARIS directing him to release all personnel detained at the Special Detention Centre to me personally or to my representative, at LIEGE airport.

30th June.1945.

I left for England leaving Lieut. TOEPFL in charge. All the professors gave me their word to carry out any instructions given by Lieut. TOEPFL and they were handed over to Mr. OATES, whom I had designated for the task, at LIEGE airport on the 3rd July and flown by special aircraft to TEMPSFORD.

Lieut. Colonel PAGE and his staff were extremely helpful during the whole of my stay in Belgium.

VI. SUMMARY.

The operation has been successful to date in that,

- (1) The professors have been detained for over ten weeks without any unauthorised person becoming aware of their identity or place of detention, and,
- (2) They have, with considerable difficulty, been kept in a good frame of mind.

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-11-

The following are brief character sketches of the professors:-

VON LAUE.

A shy mild mannered man. He cannot understand the reason for his detention. He has been extremely friendly and is very well disposed to England and America.

HAHN.

A man of the world. He has been the most helpful of the professors and his sense of humour and common sense has saved the day on many occasions. He is definitely friendly disposed to England and America.

HEISENBERG.

He has been very friendly and helpful and is, I believe, genuinely anxious to co-operate with British and American Scientists although he has spoken of going over to the Russians.

GERLACH.

Has a very cheerful disposition and is easy to handle. He appears to be genuinely co-operative.

HARTECK.

A charming personality and has never caused any trouble. His one wish is to get on with his work. As he is a bachelor, he is less worried than the others about conditions in Germany.

DIEBNER.

Outwardly very friendly but has an unpleasant personality and is not to be trusted. He is disliked by all the others except BAGGE.

VON WEISZACKER.

A diplomat. He has always been very friendly and co-operative and I believe he is genuinely prepared to work with England and America but he is a good German.

WIRTZ.

An egoist. Very friendly on the surface but cannot be trusted. I doubt whether he will co-operate unless it is made worth his while.

BAGGE.

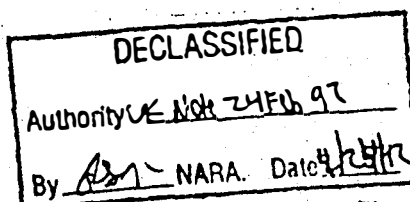
A serious and very hardworking young man. He is completely German and is unlikely to co-operate. His friendship with DIEBNER lays him open to suspicion.

KORSHING.

A complete enigma. He appears to be morose and surly. He very rarely opens his mouth. He has, however, become more human since his arrival in England.

14th July 1945.

C. Bliskin
MAJOR.



TOP SECRET

Mr. M. Perrin for General Groves
through Lt. Cdr. E. Welsh

Ref. FHX

To: Mr. M. Perrin and Lt. Comdr. Welsh.
From: Major T.H. Rittner.

OPERATION "EPSILON". (3rd - 18th July 45).

1. General.

1. A report covering the operation on the continent from May 2nd until 3rd July 1945 has already been submitted.

2. The arrangements for bringing the party to England went according to plan and the following landed at TEMPSFORD on the afternoon of 3rd July and were taken to FARM HALL by car.

- Professor VON LAUE. -
- Professor HAHN. -
- Professor HEISENBERG.
- Professor GERLACH.
- Doctor HARTECK.
- Doctor VON WEISZACKER. -
- Doctor WIRTZ. -
- Doctor DIEBNER.
- Doctor BAGGE. -
- Doctor KORSHING -

together with four PW orderlies. A further PW orderly has since been added to the party.

3. All the Professors have renewed their parole to me in writing in respect of FARM HALL and grounds and I have warned them that any attempt by any one of them or by the orderlies to escape or to communicate with anyone will result in them all having their liberty considerably restricted.

4. Ordinary army rations are drawn for the professors and the officers and troops and these are prepared for all by the PW cooks.

5. Microphones have been installed in all the bedrooms and living rooms used by the professors. This installation has proved invaluable as it has enabled us to follow the trend of their thoughts.

In the following conversation, DIEBNER and HEISENBERG discussed the possibility of there being microphones in the house. The conversation took place on 6th July in the presence of a number of their colleagues:-

DIEBNER: " I wonder whether there are microphones installed here?"

HEISENBERG: " Microphones installed? (laughing) Oh no, they're not as cute as all that. I don't think they know the real Gestapo methods; they're a bit old fashioned in that respect."

11. MORALE.

1. The party has settled down well at FARM HALL but they are becoming more and more restive. The question of their families is causing them the greatest anxiety and I believe that if it were possible to make arrangements for an exchange of messages with their families, the effect on general morale would be immediate.

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Authority UK NOK 24 Feb 97

By *AS* NARA. Date *4/1/97*

TOP SECRET

- II -

2. Most of the recorded conversations are of a general nature and show that they are pleased with the treatment they are receiving but completely mystified about their future.

3. Lt. Comdr. WELSH visited FARM HALL on 7th July. The atmosphere was somewhat tense as can be seen from the following conversations:

(a) Conversation between HEISENBERG, HARTECK, WIRTZ, KIEBNER and KORSHING after the announcement of Lt. Comdr. WELSH's visit:

HEISENBERG:

"I can see the time is coming when we must have a very serious talk with the Commander. Things can't go on like this."

HARTECK:

"It won't do. We have no legal position since they have to keep us hidden."

HEISENBERG:

"Apparently they feel guilty about their own scientists, otherwise one can't understand it. I tell you what we'll do; one evening we'll make the Commander drunk and then he'll talk. We'll play bridge and then talk seriously from one o'clock onwards."

WIRTZ;

"I think you should speak to the Commander and tell him we are very dissatisfied and then we can make him drunk one evening."

HEISENBERG:

"Yes, that is the right sequence of events. First there will be an afternoon when we will go for him and break him down and then an evening when we will make it up."

HARTECK:

"Yes, and tell him in no uncertain terms that we are being wronged".

HEISENBERG:

"Yes, of course."

DIEBNER:

"You appear to have a certain influence on him and I think that you could achieve something with him".

HEISENBERG:

"Well, I think I am more or less in his good books. I will point out to him that he has let STARK and LENNARD go on living happily in GERMANY whilst we poor wretched have to let our wives and children starve."

HARTECK:

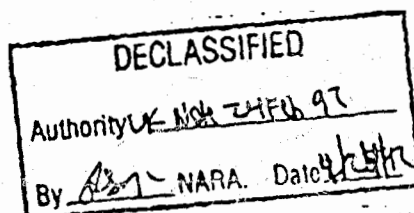
"In the meantime the British and American soldiers are looting everything at home."

WIRTZ:

"He doesn't mind that".

HEISENBERG:

"Oh, yes, he does".



- III -

DIEBNER:

"With a bit of cunning, we may get something out of this. First of all they are keeping this whole business here secret and secondly the idea seems to be to be friendly to us."

HEISENBERG:

"I should say that the point is that they don't yet know what they want. That's the whole trouble. They don't want us to take part in any discussion regarding our future as they don't want us to have any say in the matter. They want to consider what to do and they have not yet agreed among themselves."

HARTECK:

"But they can't say to you: 'You must stay here.' They can merely ask: 'Do you want to stay here under these conditions'? Or can they say: 'You must stay here'."

HEISENBERG:

"Of course, they can if they want to. Of course it is possible they will agree to ask us whether we want to stay in England or go to America but that we cannot stay in GERMANY."

DIEBNER:

"When the Commander comes he is sure to bring some letters or some good news with him. As soon as he comes he will try and pacify us with all sorts of excuses."

KORSHING:

"Then he will talk for hours and afterwards think to himself: 'Well that's all right, now I've calmed them down for a bit.'"

(b) Conversation between VON WEISZACKER, HAHN, HEISENBERG, and WIRTZ after Lt. Comdr. WELSH had had a talk with them.

WEISZACKER:

"I was very annoyed with the way the conversation began. That was when you started about the letters. When he said: 'Yes, they have gone but there has been no reply yet. It's all very mysterious.'"

HAHN:

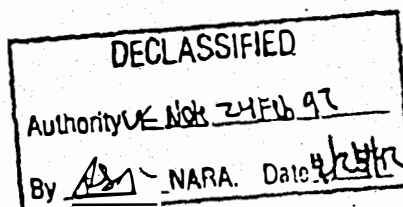
"No, He said they had not yet been sent. That's what he said."

WEISZACKER:

"That came out bit by bit after we had really questioned him. And then the remarks about 'misfortunes' etc. of course it's easy to bring up things like that and I can understand an Englishman being annoyed at our bringing that sort of thing up but that was not the proper way to reply to your questions. I felt I didn't want to listen to it all and I didn't want to give the impression that I disagreed when the man said things like that. That's why I left the room; also of course to make it easier for you."

HAHN:

"I would be very pleased Mr. HEISENBERG if you would have a talk with him. You needn't know the details of my conversation with him."



- 1y-

HEISENBERG.

"He started of his own accord at lunch. I got the impression that he is rather depressed about the whole situation here and the fact that he got a somewhat hostile reception. He noticed it all right."

WIRTZ.

"HAHN told him that we are living here like princes but what use is that to us when we have no news of our families, have no idea what is to happen to us, and are out of touch with our work. Although we are well treated, we are nevertheless prisoners."

HEISENBERG:

"It certainly made an impression on him and he wanted to talk to me about it at lunch but I refused and said: "We will have a private discussion afterwards."

WEISZACKER:

"I don't think we ought to spoil our chances with this man as he may be the one who can help us against others who are more hostile to us. He probably came here expecting us to be cheerful and to receive him as well as we did last time at LE VESINET. He felt at once that that was not the case and was naturally annoyed."

4. The general lines upon which the professor's minds are working can be seen from the following conversations.

(a) Conversation between DIEBNER, HEISENBERG, HARTECK, WIRTZ and KORSHING on 6th July.

DIEBNER:

"Suppose you were to escape and get to CAMBRIDGE; you have a lot of friends there. That would cause a terrific sensation. The whole thing would become known. Surely you would do that if they detain you here for a year."

HEISENBERG:

"If nothing happens now, I will certainly go to the Major (RITTNER) in a comparatively short time and say to him: "I ask permission to break my parole." Then he will be in the awkward position of having to post an armed sentry outside my door. That will cause trouble higher up."

DIEBNER:

"That would at any rate result in some action being taken. What could they do to you? If you escaped and really tried to get to CAMBRIDGE, they could do nothing. They could get the police to bring you back but the damage would be done."

HARTECK:

"They seem to be afraid that one might do something hostile to England but they are hiding us from their own people and that is the amazing thing. If it had been the other way round - we never hid a foreign scientist in Germany, the other scientists all knew about it."

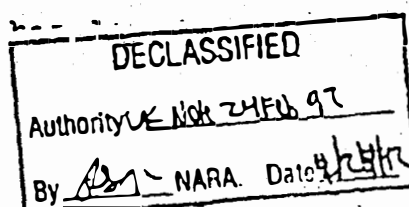
DIEBNER:

"The awful thing with the English is that it takes ages before they make up their minds to do something."

WIRTZ:

The Empire

ough centuries; they



- V. -

have plenty of time. They can't understand it when someone is in a hurry."

HEISENBERG:

"One can say that they do things better than others because they take their time."

DIEBNER:

"They have money and in consequence have time."

HARTECK:

"The longer one is here, the more anxious one is to get home. In addition, it annoys one to be left in doubt. One gets terribly bitter."

DIEBNER:

"That's it - terribly bitter."

HEISENBERG:

"It may be that the British Government are frightened of the communist professors, DIRAC and so on. They say: "If we tell DIRAC or BLACKETT where they are, they will report it immediately to their Russian friends, KAPITZA and Comrade STALIN will come and say: "What about the BERLIN University Professors? They belong in BERLIN."

DIEBNER:

"It's quite possible they just don't want to say anything."

KORSEING:

"Then of course they will have to wait until everything has been settled by the "Big Three".

DIEBNER:

"I think the right thing in that case would be for the English to give us a hint in some way. They may not be able to say it openly because of Comrade STALIN."

HEISENBERG:

"It is possible that the "Big Three" will decide it at POTSDAM and that CHURCHILL will come back and say: "Off you go, the whole group is to return to BERLIN" and then we'll be in the soup."

(b) Conversation between WIRTZ and VON WEISZACKER on 7th July:

WEISZACKER:

"These people have "detained" us firstly because they think we are dangerous; that we have really done a lot with Uranium. Secondly, there were important people who spoke in our favour and they wanted to treat us well. These two facts were mixed up. Now they have got into this awful political muddle."

"The decent thing for them to do now would be to say to us: "It is not possible to come to a decision about you so quickly. What shall we do? Would you like to remain with your families for the time being or - ?" They don't do that but prefer to keep us on ice. That's not nice of them. As a matter of fact I believe them when they say it has to do with the election and all sorts of political muddles. I don't believe it is due to malice that they do nothing with us but it is just that they cannot come to a decision about us".

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Authority UK NOK 24 Feb 97

By *Am* NARA. Date *4/1/97*

WIRTZ:

"Yes, I could quite understand that, but they could say: 'We will come to some arrangement now about your families.' What's the idea of the whole thing?"

WEISZACKER:

"Yes but of course that is difficult - the French zone of occupation. But the damnable thing is that they won't let one have any say in what is to happen to one or one's family or give one any hopeful indication of what is going to happen."

(c) Conversation between WIRTZ, HAHN, and DIEBNER on 16th July after reading in the newspaper that LORD CHERWELL was attending the POTSDAM conference:

WIRTZ:

"That's the man who has had us detained."

HAHN:

"If CHERWELL knew we were detained here, something would happen. He doesn't know; he would certainly speak to one and discuss what he should or could do."

DIEBNER:

"Things like that will certainly be discussed. I imagine that they will decide at the 'Big Three' conference which scientists are to go to RUSSIA."

HAHN:

"How should CHERWELL know anything? He doesn't know anything about us; that's the stupid part about it - But perhaps he does know."

III. ATTITUDE TOWARDS BRITISH AND AMERICANS

1. Some interesting sidelights on the attitude of some of the professors towards Britain and America appear from the following conversations between BAGGE and KORSHING.

(a) 8th July.

KORSHING:

"It makes me furious when people are so childishly anglophil. It was just the same in HECHINGEN."

BAGGE:

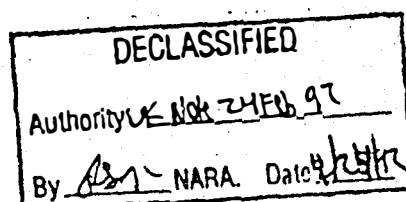
"How do you mean?"

KORSHING:

"They handed them the water on a platter, they did the same with the Uranium and all the instruments and all the secret files in duplicate and - I don't know - 20 gr. of radium. That's awful."

BAGGE:

"WIRTZ and BOPP buried 2 (10?) gr. of Radium which they will sell privately later."



KORSHING:

"WEISZACKER, although he is clever, imagines he can negotiate with them regarding the handing over of the water and on what conditions. They discussed it with the Commander. At first they wanted to say: "We will only tell you on condition that you let us go on working on it." They imagined they could get away with that. He need only threaten them with bread and water and they will give way."

(b) 11th July

BAGGE:

"If we want to continue working on our subject, we will certainly have to work together with the Anglo-Americans. no one has any money in Germany."

KORSHING:

"If one is convinced that Germany will be occupied by the Russians for a long time and you work on the production of weapons for the English, the end result will be that you will make GERMANY into the (future) battlefield. The English are, of course, really much too careful to think of fighting RUSSIA. Of course I would have no pangs of conscience in making neutron sources for the Americans. Of course we could not separate Uranium for them with the existing separation apparatus. I would be perfectly willing to carry on working with that as it is completely harmless (laughs)."

"From what I know of the Anglo-Americans, I don't relish the idea of their assimilating us as easily as all that. The result will be that all the good work we may do in our lives will, one could almost say, go to the credit of Anglo-American brains. You can't imagine WEISZACKER and WIRTZ doing anything but remaining in GERMANY for the rest of their lives."

BAGGE:

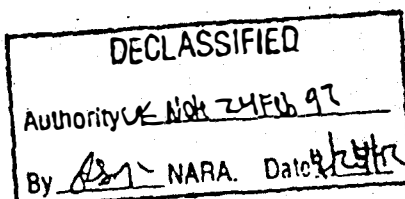
"What do you mean? The first thing WIRTZ did was to ask "will we be given British nationality?"

KORSHING:

"He had had all sorts of other discussions beforehand. Don't imagine it was his idea. I was once talking to WIRTZ and HEISENBERG and I said: "It would certainly be a clever move for anyone who is thinking of working in England to acquire British nationality as otherwise he would be shot if he fell into Russian hands". They both agreed that one would have to do that. If one is taken to England, one may have to stay there."

"I would rather take Swedish nationality than stay in GERMANY and wait for the next war. On the other hand I would not make any effort to become British. If there is nothing more to be made out of GERMANY, one should at anyrate get away from RUSSIA. VON WEISZACKER is more or less resigned to the idea of becoming Russian one day."

"Suppose the English were to come and say: "You can carry on with your work, in fact you are to go on working on Uranium."



We will take everything back to HECHINGEN but you must sign a paper." Then presumably one would have to sign in order to get away from here. But would you really do it?"

BAGGE:

"I would say that even during the war I was able to carry on my scientific work freely and I would ask whether I could continue to do so."

KORSHING:

"I would say the same, of course. If they said "No", I would sign all the same and do it in spite of that".

On the other hand, of course, they will not give us the heavy water any more. They may say: "Go back and work but not on the Uranium machine." "They know we cannot get hold of two tons of Uranium secretly. And then of course they may say: "The Uranium machine people are to go back but the isotope-separators must carry on working at separating isotopes under American control."

BAGGE:

"Men like WIRTZ will want to do something too. WIRTZ may construct his curious ~~xxxxxxx~~ machine again then."

KORSHING:

"He will not be able to separate even 1 milligram of anything. Wirtz has the same problem as I have with my apparatus. It is a question of solubility. As long as he uses fluids which are not mercury, you get the solubility effect just the same with him as with me. The difference between his apparatus and mine is that his stages are single and mine are more compact. But of course he will try and play about with it even if it is no good. But I believe the English may be satisfied with the fact that they have the apparatus. But I imagine we will have to sign one thing: that we must keep silence about all the apparatus they have taken away from us. I can't believe they will let us go; we could then publish the theory of both apparatus. We will certainly have to sign a declaration that we will not publish it. One must be very careful not to let ourselves in for anything."

2. DIEBNER and BAGGE somewhat surprisingly expressed a desire to acquire British nationality in the following conversation ~~at~~ on 17th July:

DIEBNER:

"I would be glad BAGGE if we could stay here."

BAGGE:

"It would be a wonderful thing if we could become English".

DIEBNER:

"And then have nothing more to do with the Party again. I would willingly take an oath never to have anything to do with the Party again."

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IV. TECHNICAL

1. The bi-weekly lectures are being continued. In fine weather these take place out of doors.
2. The following remarks were made by BAGGE in conversation with KORSHING on 9th July:

BAGGE:

"I have now solved the wave equation. Now I have to calculate the correct distribution of the charge from the wave function and the quadrupole moment from the distribution of the charge. That is what I am doing just now. First of all it is known that the deuteron is near enough spherical, hence you can get the forces acting between proton and neutron from the intrinsic energy of the deuteron, i.e., you can find a force which gives the correct mass of the deuteron. This force, of course, corresponds to a certain relative direction of the spin of the particles. But in the deuteron a definite spin position is realized, the spins of the proton and the neutron are parallel, and for this relative position of the spins you can calculate the force. A priori we know nothing about the spin position, but something can be calculated from scattering experiments. Namely, if the spins are anti-parallel, the force is (only) half as great. You can find a function, giving the force as function of the spins which has just this property. HEISENBERG has pointed this out. If you assume with HEISENBERG that the force depends on the spins in this way, the forces are twice as big in that position as compared with this position, and the spherical symmetry of the deuterons is preserved. Now we have the function of HEISENBERG's and the ~~the~~ quantity of the forces, and we can take the scattering experiments correctly into account. In other words, with the help of HEISENBERG's functions, we can explain the experimental scattering results and the intrinsic energy without contradiction.

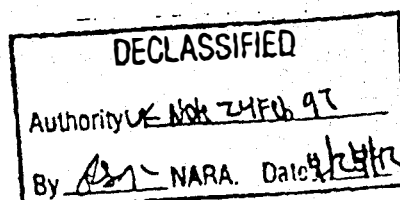
"BETHE has shown that within the theory of YUKAWA you can make assumptions which will give HEISENBERG's function of the spins. To make the calculation invariant from the point of view of relativity, you have to introduce additional terms which also depend on the spin directions and which can explain the quadrupole moment of the deuteron. BETHE has assumed forces in such a way that 1) They agree with the results of the scattering experiments. 2) They give the correct mass of the deuteron. 3) They give the quadrupole moment of the deuteron correctly. That is all correct, but it is correct only, because he introduces a new term for every effect he wants to explain. The starting point was the mass of the deuteron which is obtained with a Then come the scattering experiments which require HEISENBERG's term. To obtain the quadrupole moment correctly, you need the YUKAWA term which BETHE has used. Each term is introduced for a specific purpose. Of course, it is a possible theory. You put as much into it, as you need to explain new (experimental) results."

HAHN:

"We don't know the properties of Uranium 94, but we know those of '93'."

BAGGE:

"You wait until the '93' has completely disintegrated, and then you should really have pure '94'."



HAHN:

"That is far too little, you can't do anything with that. You will get nothing of an element with a period of decay of 10000 years through the disintegration of an 2.3-day-element."

BAGGE:

"Why? You have the 93-element with a period of decay of 2.3 days, and now you wait for 20 days. Then there will be nothing left of the 93-element which will have completely transformed itself into the 94-element."

LAUE:

"That is too little."

HAHN:

"There are as many atoms as correspond to the '93'. But you can prove the (existence of) '93' for the simple reason that in 2.3 days - that means actually (in) seconds it disintegrates by one five-thousandth."

BAGGE:

"Now KORSING does the following: he takes your trace of the 93-element which you have concentrated."

HAHN:

"Every ten years one 'alpha' ray will be emitted. How can you demonstrate that?"

BAGGE:

"If so far you have been able to demonstrate 10000 years by alpha counting methods i.e., to confirm 10000 years as a lower limit, then you should be able to improve on this by approximately another 1000 by the use of a "Plattenmethode" as KORSING has stated; but the zero-effect (Null Effekt) will upset the measurements."

V. FINANCE

The professors told me some time ago that they all had German money with them which they would like to send back to their families. In consequence I asked them on 7 July to let me know how much each individual had. The following conversation took place between DIEBNER and GERLACH:

DIEBNER:

"I wanted to put down that I am carrying a certain sum."

GERLACH:

"I would just write; "I have so many thousand marks; it was money to pay -"

DIEBNER:

"Funds of the Reich Research Board (Reichsforschungsrat)"

GERLACH:

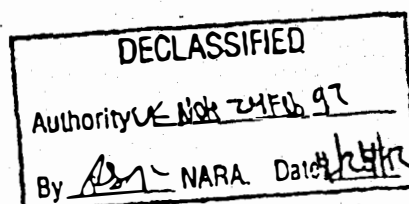
"No not Reich Research Board but Research Society."

DIEBNER:

"Yes."

GERLACH:

"For the payment of the salaries of assistants and technical personnel. The money was at my home and I took it with me; I had no chance of banking it."



DIEBNER:

"I have just counted it. I should have had RM 95,000 with me but it is only RM 79,000 and something. I gave some of it to KREMER (?). I should have RM 35,000 of my own money and RM 60,000 belonging to the Research Board. But I have only got a total of RM 79,000. Perhaps I gave some to my wife."

Subsequently I was given the following list of money carried by each individual:

VON LAUE	RM	201
HAHN		785
HEISENBERG		1,809
HARTECK		10,400
GERLACH		400
VON WEISZACKER		550
WIRTZ		726
DIEBNER		79,246
BAGGE		1,238
KORSHING		<u>1,034</u>
	RM	<u>96,389</u>

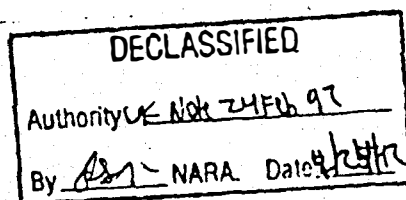
VI. PERSONALITIES

1. The Professors

- (a) VON LAUE Appears, from monitored conversations, to be disliked by his colleagues.
- (b) HAHN Unpopular with the younger members of the party who consider him dictatorial.
- (c) HEISENBERG Has been accused by the younger members of the party of trying to keep information on his experiments, to himself.
- (d) VON WEISZACKER Told WIRTZ that he had no objection to fraternising with pleasant Englishman but felt a certain reluctance in doing so 'this year when so many of our women and children have been killed'.
- (e) DIEBNER Is very worried about his future and has told BAGGE that he intends to send in a formal request to be reinstated as a civil servant. He hopes we will forget that he was a member of the Nazi Party. He says he only stayed in the Party as, if Germany had won the war, only Party members would have been given good jobs.

2. Others.

- (a) BOTHE There has been a lot of speculation as to why Professor BOTHE has not joined the Party as expected. They imagine he has been clever enough to be able to stay in Germany and carry on with his work!
- (b) EWALD (?) Stated by GERLACH to have possessed an exceedingly good mass-spectograph able to produce an unusually large number of lines.

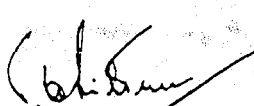


XII

(c) MAUER (?) One of the professors in conversation with GERLACH said he was afraid of a physicist named MAUER who was an ardent Nazi but a poor research worker. MAURER worked with STRASSMAN (?) on the disintegration of molybdenum and Uranium.

(d) MEYER A physicist, head of the Development Section of the torpedo experimental station. He is in his middle thirties and is a graduate of KARLSRUHE University. He is an ardent Nazi.

(e) STRASSMANN (?) Worked with MAURER on the disintegration of molybdenum and Uranium. (See above).


Major.

Farm Hall
19th July, 1945.

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Authority UK NOK 24 Feb 97

By AS NARA Date 4/2/97

11 August 1945

Subject: Transmittal of report F.H. 2 of Operation "Epsilon" -
dated 1 August 1945.

To: Major Francis J. Smith,
Room 5119, New War Dept. Bldg., Washington, D. C.

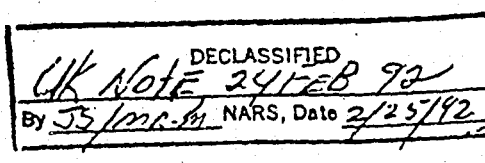
Attached is report No. 2 of Operation "Epsilon".
Report No. 1 has been furnished your office through British
channels. Report No. 3 indicating the reaction of the guests
to Valhalla Day will follow in the near future.

For the Military Attache:

H. K. CALVERT,
Major, F.A.
Assistant to the Military Attache.

Inclosure - 1.
cy No. 1 of above report

TOP SECRET



AMERICAN EMBASSY
OFFICE OF THE MILITARY ATTACHE
1. GROSVENOR SQUARE. W. 1.
LONDON. ENGLAND

1 September 1945

Subject: Farm Hall, "Epsilon" Report No. 2.- Re Goudsmit.

To: Major Francis J. Smith, Room 5004, New War Dept. Bldg.,
Washington, D. C.

Attention: Mr. Ryan.

1. Major Smith asked that this office get the original transcript of that part of Farm Hall Report No. 2 wherein Harteck mentioned Goudsmit's parents and made the statement, "Of course we murdered them". The German text of that statement is as follows:

WIPTZ: "Ein Mann wie GOUDSMIT will uns garnicht richtig helfen, der hat ja seine Eltern verloren.

HARTECK: Ja, also natuerlich, ganz kann der GOUDSMIT nicht davon absehen, dass wir seine Eltern ungebracht haben. Das ist ja auch wahr, ich meine, dass ist nicht so ganz leicht fuer ihn."

2. The word "ungebracht" is probably best translated to mean "killed" rather than "murdered".

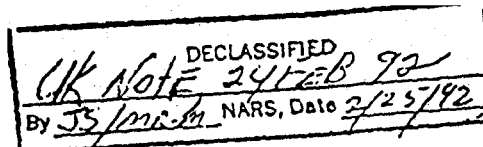
For the Military Attache:

H. K. Calvert

H. K. CALVERT,
Major, F.A.

Assistant to the Military Attache.

TOP SECRET



TOP SECRET

Captain Davis for
General Groves.

To: Mr. M. PERLIN and Lt. Cdr. WELSH

From: Major T.H. RITTNER

OPERATION "EPSILON"

(18-31 July 45)

FH # 2

I. General

There has been very little change in the position at FARM HALL since the last report. Outwardly the guests are serene and calm, but it is clear that their restiveness is increasing. Suggestions have been made that one of the guests should attempt to get a letter to CAMBRIDGE. Steps have been taken to prevent this.

II. Morale

The following conversations show the general trend of morale:

1. Conversation between HEISENBERG, VON WEISZACKER, WIRTZ, HARTECH and DIEBNER on 18 July:

WEISZACKER:

I would say we must wait for the 'Big Three'. The whole thing is connected with that.

WIRTZ:

This is the position. Why don't they want to send letters? Not because there is no post; that's all rot; of course they could send a letter. For some reason or other no one must know that Professor HEISENBERG etc. are here. That's the point. The moment anyone, even your wife is told "Professor HEISENBERG is well and happy", they will realise that he is still in captivity.

HEISENBERG:

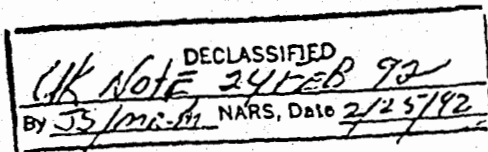
Everyone in HECHINGEN knows that I have been arrested, but the moment news gets through, they will know: "Ha! They are still alive".

WEISZACKER:

They know that in any case.

HEISENBERG:

I could also imagine that they are afraid of the following: Assume that it became known that we are here; some clever journalist would turn up and, of course he would not be allowed in. He would have a look at the place from outside, see us playing all sorts of games in the garden, sun bathing etc. The next day there would be a terrific article in the newspaper just like it was with GOERING: "German Nazi Scientists enjoying life in England. For lunch they have -" He could write a wonderful article like that and that would



of course be very awkward for everyone concerned. I could well understand that that is the reason they want to keep it secret here. Of course if our colleagues who know something about the business - GOUSMIT for instance - were clever, they would put another article in the newspaper, about anti-Nazis. It could start with Pastor NIEMOELLER and Bishop GAHLEN.

WIRTZ:

A man like GOUSMIT doesn't really want to help us; he has lost his parents.

HARTECK:

Of course GOUSMIT can't forget that we murdered his parents. That's true too and it doesn't make it easy for him.

DIEBNER:

I would imagine that we will be given more freedom the moment the Russians say: "We agree, you will take over the scientists". They are negotiating with the Russians as to who shall be handed over to Russia and who shall not. Presumably that is being discussed in Berlin now.

WIRTZ:

Surely the Major must have noticed that our morale has sunk.

HARTECK:

He's noticed that all right.

WIRTZ:

It's another question whether our attitude is directed against him personally.

HEISENBERG:

No, he knows it is not against him personally.

WIRTZ:

You can see it in the William Joyce case which has been postponed until 11 September. The English are like that.

HARTECK:

Yes. They've got plenty of time.

WIRTZ:

If I were ever to land with airborne troops in England I would have all the men arrested straight away and they would be separated from their wives for two years just to show them what it's like.

HEISENBERG:

I think there is a 90% chance of our getting back to Germany.

HARTECK:

Yes. I think that is most likely. At first I thought they would really be more interested in getting information out of us. But they don't do that.

HEISENBERG:

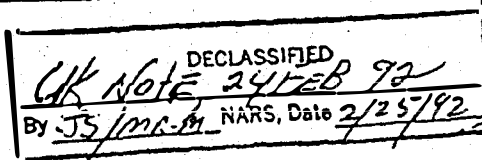
Perhaps they won't do so.

HARTECK:

Apparently not. They will wait until they can do it better themselves. Then we will have to swear on oath not to talk about the thing etc. and then perhaps they will pay each of us £500.—

WIRTZ:

Not on your life! We will have to pay for having been here.



2. Conversation between WIRTZ, HARTECK, HEISENBERG on 21 July:

WIRTZ:

I think there is a very good chance we will get back to Germany. There is a 25% chance we will get back before 1 December. The chance of getting back between 1 December and the end of next year, I would put at 70%. I think there is a 40% chance that we will never get back at all. Of course the percentages don't add up to 100. I think there is a 15% chance that we will never see our wives again.

HEISENBERG:

That's all much too pessimistic. I think there is a 35% chance that we will get back before 1 December. The chance of our getting back within a reasonable time after that date, I would put at 50%. The chance of our never getting back except perhaps in totally different circumstances after many, many years, I would put at 14%. There is 1% chance that we will never see our wives again. I can see no reason to assume that they want to treat us badly, but I can see a reason to assume that they don't want to have us in Germany as they don't want us to pass on our knowledge to other people.

HARTECK:

That is one point but on the other hand we may be shot; not by the English but by the people there. If one of us went to Hamburg University some mad student might come and shoot one.

HEISENBERG:

I still feel very strongly that they are making an exception in our case in that they are treating us better than most others and therefore I should say we will see our wives again even if we don't return to Germany. That would only be prevented if something unforeseen occurred. Of course one never knows, something astounding may suddenly happen.

WIRTZ:

That's what I think. I consider there is a 15% chance of that.

3. The thing which is worrying the guests more than anything else is the fact that they are unable to send news to or get news from their families. The following conversation between WIRTZ, KORSHING and HEISENBERG took place shortly after I had discussed this question with HEISENBERG on 26 July.

WIRTZ:

I can't understand that. My wife will tell every Frenchman that the English have taken me away.

KORSHING:

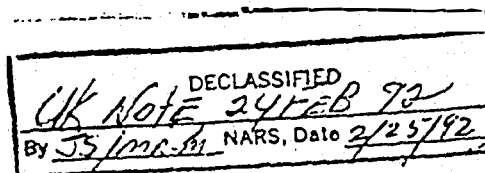
I don't believe that is the real reason.

HEISENBERG:

Then what do you think is the real reason?

KORSHING:

They want to keep us as long as possible from contact with anyone.



WIRTZ:

I don't quite understand that because, if that were really the case they ought to have taken our wives too. But in any case everyone in HECHINGEN knows we were taken away. I can't understand it.

HEISENBERG:

The whole position with regard to Russia depends upon the outcome of this election. It is obvious that if Attlee becomes Prime Minister -

KORSHING:

We will be handed over to Russia. That's just it.

HEISENBERG:

That would change the whole political situation.

WIRTZ:

They have done wrong in detaining us and now they can't get out of it. It is unpleasant for them. I can see that one of us will have to get to Cambridge one day.

HEISENBERG:

Yes in certain circumstances.

WIRTZ:

We'll have to fix that, or send a letter to Cambridge. That should be possible.

KORSHING:

Of course, I will put it in the letter box.

HEISENBERG:

That's all right but so far you have not been able to do it because you have given your parole.

KORSHING:

That's why I always said we should give it for a limited time.

WIRTZ:

We will just say: "We take it back" and then one day -

HEISENBERG:

The first thing they will do will be to post a sentry with a tommy gun.

KORSHING:

They can't do that so quickly; if we do it cleverly, it can be done at 10 o'clock in the evening. (laughter)

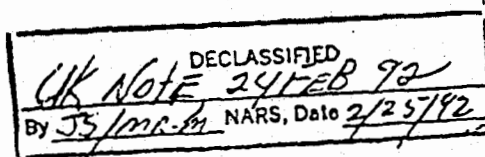
HEISENBERG:

We could just throw it out of the window over the wall. You might do that in any case but let's wait a bit.

4. Speculation as to the reason for their detention is still a favourite topic of conversation as can be seen from the following talk between HEISENBERG, HARTECK and GERLACH on 26 July:

HEISENBERG:

It looks as though the Americans fear nothing so much as the possibility of the French getting even an inkling of the Uranium business - very odd. The Americans know that JOLIOT is interested in the business and they are afraid that JOLIOT, who is a communist, will do something.



HEISENBERG: (Cont.)

with the Russians. At any rate, if JOLIOT gets to know all about it, the Americans can't prevent the Russians from finding out all about it. If they were forbidding us to write letters merely in order to annoy us, there would be no reason for treating us so well here; and they have always treated our families well.

HARTECK:

They are probably not really frightened of the French but only of the Russians.

GERLACH:

Certainly.

HEISENBERG:

The Russians are certainly two years behind us in the separation of Uranium but if they put people like LENKO (?) and LANDAU etc. on to it they will most certainly succeed.

HARTECK:

Is that the LANDAU from GOETTINGEN?

HEISENBERG:

No, that is the man who was often in Copenhagen. He worked on -

GERLACH:

Geomagnetism.

HEISENBERG:

He worked with me at Leipzig. He's a very clever Russian Jew.

HARTECK:

Doesn't Joffe have anything to do with it?

HEISENBERG:

He deals with the political side. LENKO (?) is a good man too.

GERLACH (?)

The whole thing as far as we are concerned is really a political question. They're not interested in us as physicists.

GERLACH:

LAUE has only heard about the Uranium machine since we have been in detention.

HARTECK:

He knew absolutely nothing.

5. The following conversation between BAGGE and DIEBNER on 26 July shows their respective attitudes:

DIEBNER:

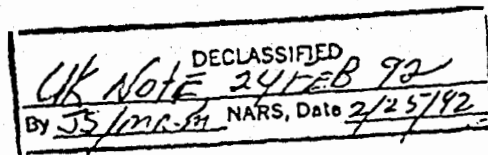
Do you think GERLACH wants to stay here for five years?

BAGGE:

We want to get the position clear.

DIEBNER:

Do you think VON WEISZACKER wants to stay here for five years?



BAGGE:

Oh yes, he wants to stay here. He likes it here. He says every day that he has never had such a good opportunity to think and work as he has here.

You must see that the situation is getting worse. Up to now I always hoped that the thing would come to end in some sensible way but I have lost hope, that is the tragedy. When I see how slowly everything goes, how it is being kept more and more secret, the fact that even here in England they have to hide us from their own people, from their Lord Cherwell, from Churchill, and everybody, that's what I can't understand.

DIEBNER:

They can't do that for ever. They must realise that something will happen if we don't acquiesce.

BAGGE:

I'm frightened. I'm reaching the end of my tether. (half sobbing)

DIEBNER:

About your family?

BAGGE:

Yes of course that's one reason.

DIEBNER:

If I have to stay here for a year and then go back to Germany, then I shall have the support of these people in some way.

BAGGE:

And in the meantime my family will be dead. After all I feel responsible for my family. I saw it for myself. The first day the French arrived in HECHINGEN and raped the women one after the other and a few days later they took me away. The day I had to leave, three Moroccans were billeted in the house - that's been going on for three months and I'm supposed to look happy here. I shall go mad. I can't stand it much longer.

DIEBNER:

You must stick it.

BAGGE:

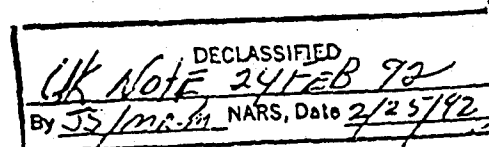
I shall refuse to go downstairs. I shall eat nothing. I shall go on hunger strike. (Note: BAGGE is much too fat and a course of bread and water would be good for his health)

DIEBNER:

BAGGE, you mustn't think we're all complete fools. HEISENBERG is no fool. Do you think men who have wangled things to their own advantage all the time are going to let themselves be fooled.

BAGGE:

You must also realise that if, during the war, we (put) people in concentration camps - I didn't do it, I knew nothing about it and I always condemned it when I heard about it - if Hitler ordered a few atrocities in concentration camps during the last few years, one can always say that these occurred under the stress of war but now we have peace and Germany has surrendered unconditionally and they can't do the same things to us now.



5. HAHN and DIEBNER had a long talk on 30 July part of which is reproduced elsewhere in this report. The following extract shows their attitude to the letter question and HAHN's philosophical acceptance of the situation:

HAHN:

I read an article in the Picture Post about the Uranium bomb; it said that the newspapers had mentioned that such a bomb was being made in Germany. Now you can understand that we are being 'detained' because we are such men. They will not let us go until they are absolutely certain that no harm can be done or that we will not fall into Russian hands or anything like that. To my mind it is a mistake to do anything. All my hopes and efforts are now directed towards getting into touch with my family. Of course I also think of my Institute as I am actually the only original member of the KAISER WILHELM GESELLSCHAFT left who was there when it was formed. Of course one is sad when one sees it all disappear but I can't do anything about it. One must be fatalist here. The longer one is 'detained' here and knows nothing, the more one gets into a state where one racks one's brain to discover what is going to happen. I fight against it and make jokes. Also I don't take life too seriously in that I always look on the bright side of things.

DIEBNER:

I would have been just the same in Germany. The day before I went away I said to my wife; "I suggest we commit suicide." I had reached that stage then.

HAHN:

My wife was like that sometimes and that is why I am worried whether she will hold out without news. See what LAUE did against National Socialism and I think I worked against it too. We are both innocent but I am not allowed to write to my wife. I have told the Major: "If my American and English friends knew how I am being repaid for all my work since 1933, that I am not even allowed to write to my wife, they would be very surprised." We are being well treated here, our slightest wish is granted if it is possible, everything except writing letters.

DIEBNER:

It is the future that worries me.

HAHN:

The outlook for the future is dark for all of us. I have not got a long future to look forward to. Suppose you want to work later with GEPLACH; do you think he will work on the Uranium machine? Men are not idealists and everyone will not agree not to work on such a dangerous thing. Every country will work on it in secret. Especially as they will assume that it can be used as a weapon of war.

We have no contacts abroad now. No foreigner can find out where we are and they will wonder. My Swedish friends with whom I used to correspond will wonder what has happened and will assume I am dead.

DIEBNER:

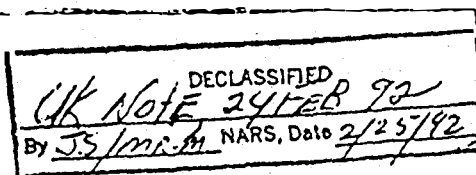
I am becoming more and more pro-English. They do everything very decently. The Major takes great trouble.

HAHN:

He takes great trouble and he would probably consider us ungrateful if we suddenly sabotaged everything. We can't do that.

DIEBNER:

No, no, that's out of the question.



III. The Nazi Party

Some of the guests appear to be worried about their previous adherence to the Nazi Party and its effect upon their future. The following conversations show their fears.

1. Conversation between BAGGE and GERLACH on 30 July:

BAGGE:

✓ All the young assistants I knew had to join the Party; those from Munich too, RENNER (?)^o and WELKE (?)^o.

GERLACH:

They didn't all do it.

BAGGE:

Those who wanted to go to the University had to.

GERLACH:

KAPPLER (?)^o and BUEHL (?)^o who were with me didn't.

BAGGE:

Do you know EULER^o who was one of HEISENBERG's assistants? He did not get a job at Leipzig because he wasn't a member of the Party. The fight lasted 18 months and HEISENBERG and HUND^o and Heaven knows who else couldn't manage it.

GERLACH:

I managed it. BLUMENFELD (?)^o was not in the Party. He had to go in 1937 because they said his wife was partly of Jewish extraction. He went into business. GRUBER (?)^o was not in the Party either.

BAGGE:

^o
MEYER (?) ?

GERLACH:

MEYER (?) was in the Party. He was at one time a big man in the SS but got fed up afterwards. We cured him. I don't know whether DUHN^o (?) was in or not.

BAGGE:

I was not in the Party. In 1933 I was taken by the High School SA people and pushed into the SA just like all the other young assistants I know. For instance WIRTZ - I don't know about VON WEISEACKER - and BOPP, they were all in the SA. It was compulsory and one could do nothing about it.

GERLACH:

I didn't join the Teachers Union (Lehrerbund).

BAGGE:

In our Institute all the assistants had to join the Lecturers Union (Dozentenbund).

GERLACH:

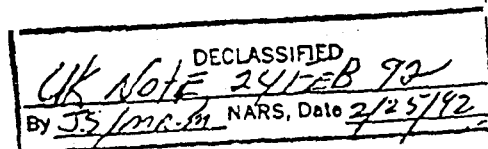
^o
RUECHERZ (?) didn't join. They tried to force us and we got letters and they made difficulties. We just threw everything into the wastepaper basket and didn't answer.

BAGGE:

That is one way of doing it.

GERLACH:

I maintain that it is not right to say that one had to do it.



GERLACH: (Cont.)

I never put anything in writing. Dr. BARTH⁶ was not a member of the Party. He had been an assistant in Russia for three years and was a proper assistant in the Institute. SCHUETZ(?)⁰ was a Party member without realising it.

BAGGE:

That's what happened to me. In the autumn of 1936 my mother wrote to me to Leipzig asking whether I wanted to join the Party. Someone had asked. My mother thought it was a good thing and had sent my name in. A few months later I received my Party book which stated that I had been in the Party since 1 May, 1935. It had been back-dated 12 months. It also said that I had sworn an oath to the FUHRER in May 1935. Not one word of it was true.

GERLACH:

I don't believe HILSCHI(?)⁰ was a Party member or MEISSNER(?)⁰ either, but I'm not sure. Only a few of the Munich men were members. They kept on complaining and making their silly speeches. I let them make them and occasionally I was really rude as, for instance when I said in the Faculty; "I don't care a damn what the Reichs Chancellery says".

DIEBNER:

Taking the line of least resistance as so many did was of course not the right course.

GERLACH:

I had a half Jew as assistant until the autumn of 1944; I kept on saying: "It's impossible to remove the man as so much depends on him". There was a girl who got into trouble later. We lost the assistant NEUMANN(?) who went into business later. None of the female personnel I had were Party members. I had no picture of Hitler in my Institute. They kept on coming and saying we should buy a picture of Hitler. I always said: "No, I already have one". I had a very small picture I had bought for 5 pfennig. The Nazis treated me badly. They reduced my salary and withdrew my allowances.

BAGGE:

Didn't that happen to other people too?

GERLACH:

No. Then they brought an action against me and I didn't go to the Institute any more. I said: "I won't go back until you withdraw the case". That was my trump card.

BAGGE:

On what grounds did they reduce your salary? You had an agreement.

GERLACH:

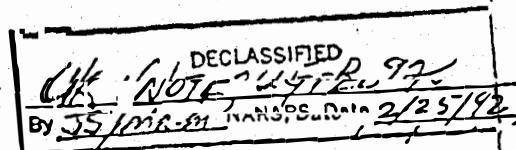
I just got a letter saying: "The agreement made between the Bavarian State and yourself is cancelled; from now on your salary will be as follows". And that was that.

(GERLACH leaves the room)

BAGGE:

They could do nothing against him. He knew GOERING personally. His brother was in the SS and that's how he managed to stay on.+ GERLACH gets a certain personal amusement out of annoying people. It wasn't just his convictions.

+ Note. In a conversation with HAHN, GERLACH said that his brother was involved in certain big money deals with the SS. He found this out when a sum of money was once transferred to his account in Berlin instead of his brother's. He expressed his disapproval of his brother's association with the SS to HAHN.



DIEBNER:

He has rows with everyone.

SACCE:

There's something behind it. Why do they keep on talking to us about the Party. HEISENBERG started it and now GERLACH has brought it up.

2. Part of a conversation between DIEBNER and HAHN on 30 July:

DIEBNER:

I wanted to tell you how I came to join the Party and how I have suffered under the Nazis. In 1933 I became a Freemason in opposition to National Socialism. I never voted for Hitler. That became known in HALLE and the result was that I got into difficulties at the Institute. Then I went to the 'Waffenamt' and was to have become a civil servant, but I did not. SCHUHMANN didn't forward my application. He said he couldn't do it because I was a Freemason. SCHUHMANN did his best for me and sent me to a man in Munich and after a year the thing went through and I became a civil servant, a 'Regierungsrat'.

HAHN:

The fact of being a Party member does not necessarily tell against a man. The newspapers say that.

DIEBNER:

Everyone knows my views. GERLACH knows them; I was never a National Socialist and never took any part in politics. WIRTZ knows my views. I told him: "I am a Party member. We'll see what happens. If the Nazis win, I shall still be a Party member and that will help us and if things go the other way, you will have to help me." That's what we arranged at that time. Now I feel rather isolated here.

HAHN:

Do you feel that you are treated here differently to the others?

DIEBNER:

That's just it. WIRTZ knows that HEISENBERG will help him no matter what happens. I am sure GERLACH would help me, he has always been very decent to me.

HAHN:

The fact that you were in the Party hasn't really done you any harm.

DIEBNER:

When I get back to Germany now everyone will say: "Party man. Party man!"

HAHN:

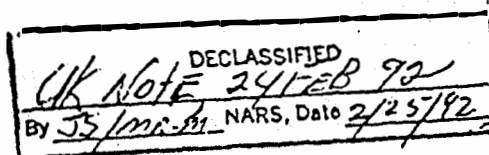
None of us know what will happen to us. In my opinion it's no good worrying too much about the future as we have no idea what will happen to us. You got on quite well with JOLIOT didn't you?

DIEBNER:

I have helped so many people. I persuaded SCHUHMANN to see that Professor PIETERKOWSKI(?) in Poland should be given facilities to go to Germany before the SS came. I often helped JOLIOT vis a vis the Gestapo.

HAHN:

What happened to the Pole?



DIEBNER:

I don't know. He didn't come. At Copenhagen SCHUBMANN wanted to remove the Cyclotron. I prevented Copenhagen from being touched. I have done so much against these people. For instance we prevented people being arrested in Norway.

HAHN:

Then I don't understand why you are worried. We can only hope that we will be able to send letters home but I don't think we can expect anything else just yet.

5. In the following conversation on 18 July, HEISENBERG relates how he tried to help some of his colleagues and WIRTZ admits German atrocities:

HEISENBERG:

During the war I had five calls for help in cases where people were murdered by our people. One was SOLOMAN(?), HONTMAN's (?) son-in-law. I could do nothing in his case as he had already been killed when I got the letter. The second one was COUSONS the Belgian cosmic ray man; he disappeared in a Gestapo Camp and I couldn't even find out through HITLER's staff whether he was alive or dead. I presume he is dead too. Then there was the mathematician CAMMILLE; I tried to do something about him through SETHL(?) but it was no good and he was shot. Then from among the Polish professors there was a logistician with a Jewish name - and then with the other Poles, the following happened; his name was SCHOUDER, a mathematician. He had written to me and I had put out feelers in order to see what could be done. I wrote to SCHOLZ(?) who had had something to do with Poland. Then SCHERRER wrote me the following ridiculous letter saying he had also had something to do with the case. He wrote: "Dear HEISENBERG, I have just heard that the mathematician SCHOUDER is in great danger. He is now living in the little Polish town of so-and-so under the false name of so-and-so." That came in a letter which was of course opened at the frontier. It is unbelievable how anyone can write that from Switzerland. I heard nothing more about SCHOUDER and I have now been told that he was murdered.

WIRTZ:

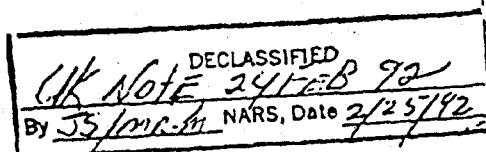
We have done things which are unique in the world. We went to Poland and not only murdered the Jews in Poland, but for instance, the SS drove up to a girls' school, fetched out the top class and shot them simply because the girls were High School girls and the intelligentsia were to be wiped out. Just imagine if they arrived in HECHINGER, drove up to the girls' school and shot all the girls! That's what we did.

IV. The Future

Speculation by the guests as to the future in general has been dealt with under the heading 'Morale', but the following conversation between DIEBNER, KORSHING and BAGGE on 21 July goes rather further:

BAGGE:

For the sake of the money, I should like to work on the Uranium-engine; on the other hand, I should like to work on cosmic rays. I feel like DIEBNER about this.



KORSHING:

Would you both like to construct a Uranium-engine?

DIEBNER:

This is the chance to earn a living.

KORSHING:

Every layman can see that these ideas are exceedingly important. Hence there won't be any money in it. You only make money on ideas which have escaped the general public. If you invent something like artificial rubies for the watch making industry, you will make more money than with the Uranium-engine. Well, DIEBNER, we'll both go to the Argentine.

DIEBNER:

I shall come with you.

KORSHING:

I know ⁰MIERKADA(?) there. I could write to him. Of course the letter must not be opened on the way.

BAGGE:

Who is he, a physicist?

KORSHING:

Yes, he has worked with SCHUELER. He came over to look around a bit. He came from the university of La Plata; not stupid, but of course he could not compete with SCHUELER. You can only build a Uranium-engine of your own in the Argentine.

DIEBNER:

That is right, there are advantages in that.

BAGGE:

I think, we should approach the Argentinian ambassador.

KORSHING:

The man ought to understand something about physics and that is always difficult as such people know nothing about it.

BAGGE:

He knows nothing about it, but the Argentinian ambassador will know that there is something in it.

KORSHING:

But you have to consider, that the Argentinian ambassador has to be careful that the British and Americans don't put one over on him somehow. They set one of their agents to work for instance, if you can talk to the Argentinian ambassador in Madrid or so, you might perhaps succeed, but I don't think you would here in England.

BAGGE:

But if you disclose your identity and explain to him the whole situation?

KORSHING:

Yes, but then you will not be in a very strong position.

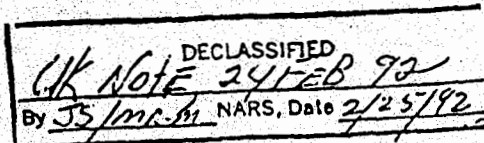
BAGGE:

Then I get to La Plata and if I get the job as an assistant, let us say, that would not be bad at all. (Pause)

KORSHING:

Actually I find it somehow very typical perhaps, but quite possible that HEISENBERG really continues to work on the Uranium-engine, in the end several really productive ideas will have been contributed by all sorts of people but people will say in the end: 'It has been HEISENBERG's work.'

Is there any Uranium ore in the Argentine at all?



DIEBNER:

I don't think so.

KORSHING:

It again makes it awkward if they have to import it - to have to import ten tons of Uranium!

BAGGE:

You can't get that at all; only from the Russians perhaps and they will not part with it either.

KORSHING:

Still, I should like to get to HECHINGEN once more to collect the rest of my things. After all I still have all my books there and the telescope - though mind you I have hidden it from the French. Of course I did not hand that over. I have got all my glass prisms, lenses, etc. I lifted a floorboard, hid the stuff and nailed the board down again.

BAGGE:

In the Institute?

KORSHING:

In my private lodgings.

(DIEBNER leaves the room)

If you work together with HEISENBERG on a Uranium-engine then you can write off your share. If you want to work on a Uranium-engine, then you would have to do it somewhere else. Of course it would be an idea to go to the Argentine with 2 people and say: "Here we are, we know how to do this and that; we have a good method for the separation of isotopes, we do not need to produce heavy water." Somehow in this fashion we have to do it. It would not come to anything if you collaborated with HEISENBERG on a Uranium-engine. They did not even bring along the small fry to this place; that is how outsiders judge the work. They get there and read all the secret reports before they take the people away from there.

BAGGE:

How long before did they have the secret reports?

KORSHING:

Two or three days before. The principal question which GOUDSMIT put to me, was: "Is that your idea? Has that been published already is that anything new?" - that is all he wanted to know. And BOPP and FISCHER they just ignore one and say "Oh well, they just made some calculations for HEISENBERG." Apart from that for instance, the ordering of apparatus from the firms and all the other various things which we have done, WIRTZ just told him (GOUDSMIT): "I have done that." Do you think WIRTZ is going to be modest in front of Mr. GOUDSMIT? No, He says: "I have built this here, I conducted the negotiations with the firms, I had that built here and I have done the experimental work and as far as the countings are concerned - everybody knows only too well how easy it is to count particles - Messrs. FISCHER & BOPP did that." And that is how WIRTZ has excluded them. GOUDSMIT takes his word for it. BOPP was quite disgusted and astonished that suddenly he was dropped like that. And that is how it is all over the world. A scientist is asked 'What have you thought out, where is your idea?' If you then make the strategic mistake of moving in the shadow of a man who is already world famous, then you are out of the limelight for the rest of your life and if you then raise your voice against that, then on top of it you will be called a trouble maker.

*Source
and it
the French*

BAGGE:

Did you notice how HEISENBERG wiped the floor with WEISZACKER?

KORSHING:

And how! I rubbed my hands with joy. It is of course very degrading that he (WEISZACKER) cannot even do a few simple calculations.

BAGGE:

HEISENBERG can now of course make it up with him, if later he publishes the thing together with WEISZACKER.

KORSHING:

As far as I know HEISENBERG, he will not do that.

BAGGE:

I don't think he will either.

KORSHING:

He will publish it and mention WEISZACKER etc. and in the end the whole effort of WEISZACKER will have been in vain because it will be said 'HEISENBERG is behind this.'

BAGGE:

For what remains in the end is the mathematical structure. The little bit of roundabout thinking which WEISZACKER did will be forgotten.

KORSHING:

If WEISZACKER does not now try hard to write down a few more formula then he is squashed altogether. I think it serves him right for WEISZACKER has unlimited ambition. (Pause) Now the really positive point about the Chief (HEISENBERG) is the following: If you do some work of your own, which he acknowledges to be sound and worthwhile, then you have complete liberty to do it. In WEISZACKER's institute you become a slave - "Now you do this, what you are doing is ridiculous, etc." WEISZACKER would never let his people work in his institute as the Chief would.

BAGGE:

That you can see from HOECKER.

KORSHING:

HOECKER is clever enough to wriggle out of it as a rule. But as we have said, if you want to work on the Uranium-engine, it is obviously completely useless to do it with the Chief.

BAGGE:

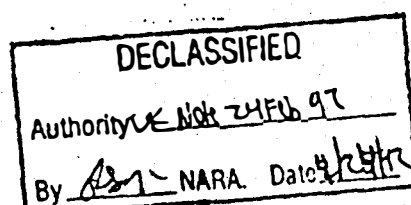
If you want to build an aircraft today, then first you have to ignore your own interests, because the state is too much interested in it, to grant you liberty to work on it as you please. I would say, the aircraft is today comparable to the Uranium-engine. That is why, if one has purely scientific interests, one should slowly withdraw from it.

KORSHING:

On the other hand HEISENBERG will say, if we cannot build a cyclotron anyway - and it ~~is obvious~~ is obvious that we cannot build one in Germany with the American..... - then we will have to hold back as a source of neutrons, at least a neutron-generator, for the production of artificial radioactive elements etc.

BAGGE:

Why can't we build a cyclotron?



KORSHING:

Because we have no money. It takes too long - over there they have them readymade and if we do not now make some progress in nuclear physics, then Germany will slowly lose her place, where nuclear physics is concerned. A 2.50 meter cyclotron - even if you could..... start on it, would only be ready when the Americans would have completed all their work on the "2.50m". One can of course still build a small cyclotron, 1m, or 80cm. It is obvious, that you can do a lot of things with the engine, enormous quantities, enormous concentrations of neutrons, in fact there are any amount of possibilities. I think the Chief has the right ideas slowly to wangle permission to run his own Uranium-engine for scientific purposes. He will probably obtain it, if the others do not in the meantime study the heavy water.

BAGGE:

I am convinced, they (Anglo-Americans) have used these last 3 months mainly to imitate our experiments.

KORSHING:

Not even that. They used them to discuss with their experts their possibilities and to study the secret documents. They probably examined a few specimens of our Uranium-blocks. From these specimens they can see for instance, whether the engine has been running already. It could have been run; the blocks must have ~~run~~ undergone some internal chemical change.

BAGGE:

But they know already, that it did not run; that they were told.

KORSHING:

That is just it. They were told practically everything up to approximately the last series of measurements. It is the same to them whether it ever came to an increase in Neutrons of 5 or 50. The issue must be quite clear to them.

BAGGE:

But they will certainly have the ambition to imitate our experiments as soon as possible and for that purpose they need the D₂O. Once they have worked with that - (int.)

KORSHING:

They'll obviously never again let go of it. If that is so, then a Uranium-engine can only run in Germany without the production of heavy water - which as HARTECK thinks is so frightfully easy, but connected with great expense, but can be run only with an efficient method for the separation of isotopes, which is technically workable with ordinary water.

BAGGE:

Quite so. But with ordinary water you need 15 tons of Uranium even with an increase in concentration of 5%.

KORSHING:

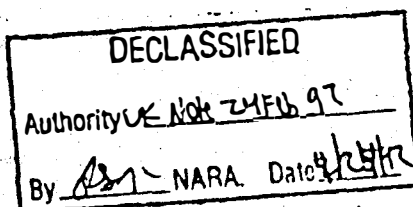
No. Just consider, you can increase the concentration of Uranium from 0.7% to 1 or 2%. If they will not let us work on Uranium and we must sign the following statement: "I pledge myself, not to run a Uranium-engine for anybody anywhere in this world", then you must sign it.

BAGGE:

I would only sign that under one condition: That they grant me enough money for other purposes, so that I have the possibility to carry on with my experiments.

KORSHING:

Of course we can say that. But then they will say: "Then we will contribute to your funds."



BAGGE:

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That would have to be a contribution of £1,000,000 per year.

KORSHING:

That we will never get, but perhaps we may get £1,30,000 a year. They do not want to destroy Germany but what England wants is to weaken her, otherwise they will never be able to achieve hegemony in Europe, if they immediately boost us up again.

BAGGE:

They now seem to plan a "United States of Europe".

KORSHING:

Yes, if Russia would not constantly interfere. They know perfectly well, that once they have let us go back to Germany they'll only have 50% control over us. They can put somebody in my room, and I guarantee you, that without that fellow noticing it, I'll be able to make an experiment. I just know he goes to see his girl friend on Saturday, so I'll just work on Saturday night. It is possible that they themselves have already great quantities of heavy water and Uranium.

BAGGE:

That I do not believe.

KORSHING:

But there are many military men in England, who say "Once we let those swine go back then they'll construct the Uranium-engine and in the end they'll blow it up." They might also say: "These people are so clever that our guard troops will be blown up with it, but not they themselves." There are also many people in England who say: "On no account must these people be treated generously; they must be made to work constantly under the threat of machine-guns." I do not believe that the Commander will achieve so much, that he will be able to say: "Here is your heavy water, here is your Uranium, now carry on with your work."

BAGGE:

There is also the question, whether the Commander wants that.

KORSHING:

Quite, if the man says: "I assure you on my word of honour." What does it mean? He did not give it to us in writing. Also he has never said: "I shall take care that your position as scientists is safeguarded." He has not even done that, but all he has said was: "I assure you on my word of honour that I - " (int.)

BAGGE:

You have heard that yourself?

KORSHING:

No, not the 'word of honour', but the word 'assure'. Of course he will not have us beheaded, that is quite clear. After all he is more or less favourably disposed towards us. I am sure there are also people who say "Behead them!" There you have to be glad, that there is such a man as the Commander. If they put a piece of paper before you: "Here, please sign" there is nothing else left for you to do, but sign. You cannot write: "I pledge myself not work on the Uranium-engine in any state, except the Argentine." In that case you would find yourself in gaol for the next hundred years (laughs) I do not believe that they will send us away without our signatures or without any assurance. The Argentine would perhaps be quite nice as a sort of bold adventure; as I said before, if one were so far advanced with the separation of isotopes, that one knew for sure one can increase the concentration of Uranium by 1% with a certain small expenditure of energy, then it would have sense, but otherwise to do the same all over

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By *AS* NARA. Date *4/1/97*

again would of course not make much sense.

I shall be glad when I have liberty of movement again and be able to walk in the street and buy a scientific book, when I can do anything at all, and can write letters to friends, who have survived the war.

BAGGE: the

I got into contact with Uranium-engine only through the war, and I have always felt an outsider and for me it would mean to take a step which I do not want to take at all, because if it had been my endeavour to make a lot of money, I could have stayed at home with my parents. I would have probably kept clear of the war equally easily. If I had joined my father's business, I do not like to think how much money we could have earned.

KORSHING:

That you can also do with the Uranium-engine; if you really put a Uranium-engine before the Argentines, then you can say: "I am a scientist, I only want to build up a laboratory for myself; pay me 500.000 pesetas, but otherwise leave me in peace." Then you can of course work on cosmic rays at the University of La Plata as much as you like and on top of that you have the 500.000 pesetas. You would get them, if you got into the good books of the right professors and politicians.

BAGGE:

But it could easily be, over there that there is an awful lot of intriguing as well. Perhaps there are a lot of people like WIRTZ.

KORSHING:

Of course you will not get the amount of pesetas which you should get according to the value of the proposition, but even so, if you get only 3% it would be a fortune.

BAGGE:

Actually you derive no benefits from your patent either.

KORSHING:

I did not tell them at all that it is a patent. I could have done so but then I would have lost everything. As it is now, if I find some third person in Sweden - if I say "This is the position, I have the patent, they do not know anything about it, take it out in Sweden; all I want for myself is 5% of what you can get from any firm." Then, when the Americans suddenly see that the patent has been taken out, they cannot do anything about it. Perhaps it will already be superfluous in a year or so. That is why I have not given it to them. I admit it is still with the Patent agent in ZEHLENDORF. Fortunately there is nothing in the Institute; there I have, of course, hidden everything. In ZEHLENDORF it is in his private flat, thank God. So if the Russians have not pilfered everything there - it may be that it has been burnt, then it is lost anyway - and if the British do not search every private house in ZEHLENDORF now, then they will not find it at all. About these 20 grams of radium, of which DIEBNER talked and which seems to belong to the German Radium Institute - I ask myself why do these people do that? If I had been there, I would have said: "Do you know that I have radium at all?" Then: "Do you know the exact amount?" Then I would have hidden at least 1 or 2 grams somewhere.

BAGGE:

WIRTZ has hidden 2 grams. Only WIRTZ knows where these 2 grams are and then DIEBNER has some as well.

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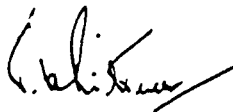
By AS NARA Date 4/1/97

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KORSHING:

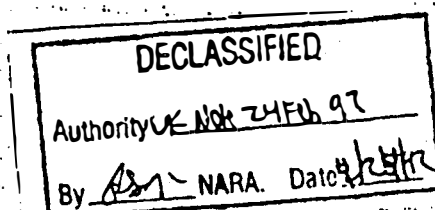
But even so, it is too much that 20 grams still fell into their hands. One could have done it like that everywhere. I saw it myself, there they pinched some measuring apparatus. Those two apparatus which I took along, they could not pinch. On the other hand of course they must not notice it, because then they say: "All right, you starve in Germany, you will not get any money from us." But our two engines they need not have got of course. The childish thing is, we need only have put them on the lawn at the back and it would have been perfect. They did not even look into the loft. I put umpteen things up there. They did not even notice the apparatus which was in that box in the Chemistry room - the box was two metres long.

V. Technical

The usual bi-weekly lectures have been given. These have been confined to general subjects.


Major.

FARM HALL
1 August, 1945.



TOP SECRET

Capt. Davis for General Groves.

Ref. FH3

To: Mr. M. PERRIN and Lt. Cdr. WELSH.

From: Major T. H. RITTNER.

OPERATION "EPSILON"

(1-6 August, 1945)

I. General

This report covers the period since my last report up to the evening of 6 August when the announcement of the use of the Atomic Bomb was made.

The effect of the announcement and the subsequent reaction of the guests forms the subject of a separate report Ref. FH4.

II. Morale

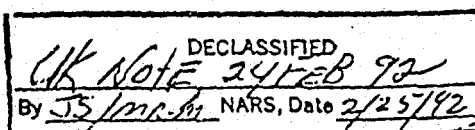
In conversation with a British officer regarding the position of communication with the families, HAHN completely broke down. BAGGE also came very near to tears when he described the fate worse than death which he pictured was that of his wife and children at the hands of the Moroccan troops.

General morale has however improved since I was able to tell the guests that permission had been granted for them to write letters to their families and that it was hoped to obtain answers. This permission was contained in a cable from Lt. Cdr. WELSH to Mr. PERRIN dated 1 August.

Letters were written and it was almost pathetic to see the efforts made by the guests to convey the information that they were in England. The look of discomfort on their faces when asked to delete certain sentences was obvious and subsequent monitored conversations showed that the sentences I had blue-pencilled were the ones which were intended to convey this information. The letters have all been rewritten, and I am trying to make arrangements through Captain DAVIS to have them delivered.

III. The Guests and the NAZIS

The Guests have been at great pains to clear themselves of any suggestion that they had any connection with the Nazis. GERLACH in particular has done his best to make this clear to his colleagues and one wonders whether this may not be due to a guilty conscience on his part. In this connection, GERLACH had a long conversation with me in the course of which I suggested that there must have been Gestapo agents working in their institutes. We also discussed the question of how much they had known of scientific work being carried out in other countries. This conversation had the desired effect



GERLACH:

Well the GRUENZIG(?) business was in the summer of 1944. At first he wanted me to send him to MUNICH. I mistrusted him and didn't let him see anything and we got rid of him with a lot of difficulty. I always said: 'The man is too valuable to be used in an office job.' Didn't GRUENZIG(?) once want to put someone in your Institute? We discussed it with you at the time and warned you. (Pause) Then DIEBNER told me he was always suspicious that someone from the British Secret Service had been with BOTHE, a certain Dr. GEHLEN(?). Did you ever know him?

HEISENBERG:

Yes I knew GEHLEN(?). I must say I can understand your suspicion of GEHLEN(?). I knew GEHLEN(?) at LEIPZIG, he worked with DOEPEL, and I couldn't quite make him out. He was recommended to me by his cousin, Philosophy-Professor GEHLEN(?) who had been at LEIPZIG and was then moved to KOENIGSBERG. His wife was Swedish and I know he had contacts abroad.

GERLACH:

He had been with the English Bank before.

HEISENBERG:

What I didn't like about the man was the fact that he had had such a varied career. He was a man of about 36 or 37; he had worked in a bank in ITALY and then in an English bank; then he had had some technical job in Sweden and had had all sorts of other jobs. He had never really completed his studies. DOEPEL took him on as he made quite a good impression. I often discussed the matter with DOEPEL and we agreed that GEHLEN(?) should at any rate be told nothing about the Uranium business. Later he went to BOTHE. We could not make him out and I believe I spoke to BOTHE about it and told him I was not sure of him. On the other hand there was some business about his having been denounced to the Gestapo in LEIPZIG. He was supposed to have had contacts abroad and the matter was investigated and he was acquitted. I can't remember exactly what happened. I wouldn't mention the GRUENZIG(?) business to the Major as it might cost him (GRUENZIG(?)) his life.

GERLACH:

No I wouldn't do that. As I said, I didn't mention ALBERS(?). I didn't say anything about him in PARIS either.

HEISENBERG:

I suspected two persons of belonging to the foreign 'Secret Service'. The first one is DELLENBACH and I am pretty certain about him and the second one is GEHLEN(?) but I am not sure about him.

GERLACH:

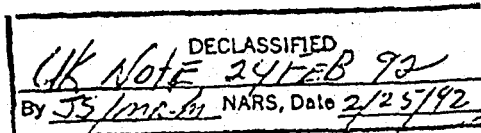
I am quite certain about DELLENBACH. You know how he got his job?

HEISENBERG:

I presume through his connections with BORMANN's cousin. I once discussed it with VOEGLER(?)

GERLACH:

I also spoke to VOEGLER(?) about DELLENBACH and also spoke to SPEER's man GOERLER(?) about it. Then there was that



TOP SECRET

- 4 -

HAHN: DOEPEL was the first to discover the increase in neutrons.

HARTECK:
 Who is to blame.

(?) VOICE:
 HAHN is to blame.

WEIZSACKER:
 I think it's dreadful of the Americans to have done it. I think it is madness on their part.

HEISENBERG:
 One can't say that. One could equally well say "That's the quickest way of ending the war."

HAHN:
 That's what consoles me.

HEISENBERG:
 I still don't believe a word about the bomb but I may be wrong. I consider it perfectly possible that they have about ten tons of enriched uranium, but not that they can have ten tons of pure U. 235.

HAHN:
 I thought that one needed only very little 235.

HEISENBERG:
 If they only enrich it slightly, they can build an engine which will go but with that they can't make an explosive which will.-

HAHN:
 But if they have, let us say, 30 kilogrammes of pure 235, couldn't they make a bomb with it?

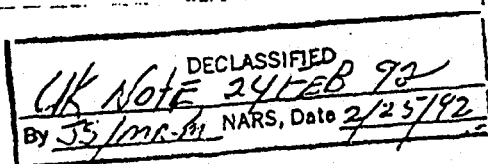
HEISENBERG:
 But it still wouldn't go off, as the mean free path is still too big.

HAHN:
 But tell me why you used to tell me that one needed 50 kilogrammes of 235 in order to do anything. Now you say one needs two tons.

HEISENBERG:
 I wouldn't like to commit myself for the moment, but it is certainly a fact that the mean free paths are pretty big.

HARTECK:
 Do you want 4 or 5 centimetres, - then it would break up on the first or second collision.

HEISENBERG:
 But it needn't have the diameter of only 4 or 5 centimetres.



TOP SECRET

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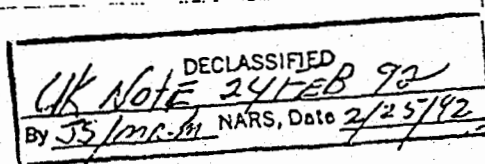
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TOP SECRET

- 5 -

HAHN:

I think it's absolutely impossible to produce one ton of uranium 235 by separating isotopes.

WEIZSACKER:

What do you do with these centrifuges.

HARTECK:

You can never get pure 235 with the centrifuge. But I don't believe that it can be done with the centrifuge.

WIRTZ:

No, certainly not.

HAHN:

Yes, but they could do it too with the mass-spectrographs. EWALD has some patent.

DIEBNER:

There is also a photo-chemical process.

HEISENBERG:

There are so many possibilities, but there are none that we know, that's certain.

WIRTZ:

None which we tried out.

HAHN:

I was consoled when, I believe it was WEIZSACKER said that there was now this uranium - 23 - minutes - I found that in my institute too, this absorbing body which made the thing impossible consoled me because when they said at one time one could make bombs, I was shattered.

WEIZSACKER:

I would say that, at the rate we were going, we would not have succeeded during this war.

HAHN:

Yes.

WEIZSACKER:

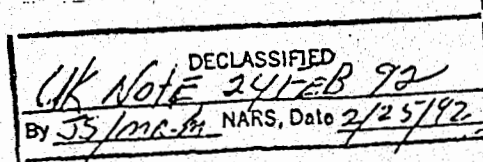
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HAHN:

Once I wanted to suggest that all uranium should be sunk to the bottom of the ocean. I always thought that one could only make a bomb of such a size that a whole province would be blown up.

HEISENBERG:

If it has been done with uranium 235 then we should be able to work it out properly. It just depends upon whether it is done with 10, 500 or 5,000 kilogrammes and we don't know the order of magnitude. We can assume that they have some method of separating isotopes of which we have no idea.



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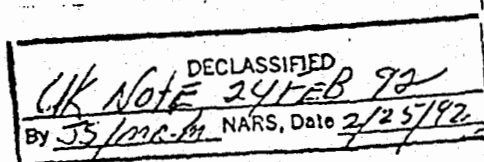
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- 6 -

WIRTZ: I would bet that it is a separation by diffusion with recycling.

HEISENBERG: Yes, but it is certain that no apparatus of that sort has ever separated isotopes before. KORSRING might have been able to separate a few more isotopes with his apparatus.

WIRTZ: We only had one man working on it and they may have had ten thousand.

WEISZACKER: Do you think it is impossible that they were able to get element '93' or '94' out of one or more running engines?

WIRTZ: I don't think that is very likely.

WEISZACKER: I think the separation of isotopes is more likely because of the interest which they showed in it to us and the little interest they showed for the other things.

FAHN: Well, I think we'll bet on HEISENBERG's suggestion that it is bluff.

HEISENBERG: There is a great difference between discoveries and inventions. With discoveries one can always be sceptical and many surprises can take place. In the case of inventions, surprises can really only occur for people who have not had anything to do with it. It's a bit odd after we have been working on it for five years.

WEISZACKER: Take the CLUSIUS' method of separation. Many people have worked on the separation of isotopes and one fine day CLUSIUS found out how to do it. It was just the question of the separation of isotopes which we neglected completely partly knowingly and partly unknowingly, apart from the centrifuges.

HEISENBERG: Yes, but only because there was no sensible method. The problem of separating '234' from '238' or '235' from '238' is such an extremely difficult business.

HARTECK: One would have had to have a complete staff and we had insufficient means. One would have had to produce hundreds of organic components of uranium, had them systematically examined by laboratory assistants and then had them chemically investigated. There was no one there to do it. But we were quite clear in our minds as to how it should be done. That would have meant employing a hundred people and that was impossible.

~~TOP SECRET~~

Copy No. 1.

- 6 -

WIRTZ: I would bet that it is a separation by diffusion with recycling.

HEISENBERG:

Yes, but it is certain that no apparatus of that sort has ever separated isotopes before. KORSHING might have been able to separate a few more isotopes with his apparatus.

WIRTZ:

We only had one man working on it and they may have had ten thousand.

WEISZACKER:

Do you think it is impossible that they were able to get element '93' or '94' out of one or more running engines?

WIRTZ:

I don't think that is very likely.

WEISZACKER:

I think the separation of isotopes is more likely because of the interest which they showed in it to us and the little interest they showed for the other things.

HAHN:

Well, I think we'll bet on HEISENBERG's suggestion that it is bluff.

HEISENBERG:

There is a great difference between discoveries and inventions. With discoveries one can always be sceptical and many surprises can take place. In the case of inventions, surprises can really only occur for people who have not had anything to do with it. It's a bit odd after we have been working on it for five years.

WEISZACKER:

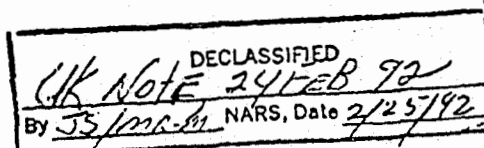
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- 7 -

HAHN:

From the many scientific things which my American collaborators sent me up to 1940, I could see that the Americans were interested in the business.

WEIZSACKER:

In 1940 VAN DER GRINTEN (?) wrote to me saying that he was separating isotopes with General Electric.

HARTECK:

Was VAN DER CRINTEN (?) a good man?

WEIZSACKER:

He wasn't really very good but the fact that he was being used showed that they were working on it.

HAHN:

That wicked BOMKE was in my Institute.

HARTECK:

I have never come across such a fantastic liar.

HAHN:

That man came to me in 1938 when the non-aryan Fraulein MEITNER was still there - it wasn't easy to keep her in my Institute. I will never forget how BOMKE came to us and told me that he was being persecuted by the State because he was not a Nazi. We took him on and afterwards we found out that he was an old fighting member of the Party.

WEIZSACKER:

Then we might speak of our "BOMKE-damaged" Institutes. (Laughter).

3. All the guests assembled to hear the official announcement at 9 o'clock. They were completely stunned when they realised that the news was genuine. They were left alone on the assumption that they would discuss the position and the following remarks were made.:-

HARTECK:

They have managed it either with mass-spectrographs on a large scale or else they have been successful with a photo-chemical process.

WIRTZ:

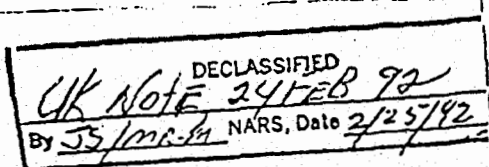
Well I would say photo-chemistry or diffusion. Ordinary diffusion. They irradiate it with a particular wave-length. - (all talking together).

HARTECK:

Or using mass-spectrographs in enormous quantities. It is perhaps possible for a mass-spectrograph to make one milligramme in one day - say of '235'. They could make quite a cheap mass-spectrograph which, in very large quantities, might cost a hundred dollars. You could do it with a hundred thousand mass-spectrographs.

HEISENBERG:

Yes, of course, if you do it like that; and they seem to have worked on that scale. 180,000 people were working on it.



- 7 -

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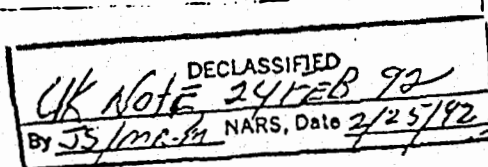
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TOP SECRET

Copy No. 1.

- 8 -

HARTECK:

Which is a hundred times more than we had.

BAGGE:

GOUDSMIT led us up the garden path.

HEISENBERG:

Yes, he did that very cleverly.

HAHN:

CHADWICK and COCKROFT.

HARTECK:

And SIMON too. He is the low temperature man.

KORSHING:

That shows at any rate that the Americans are capable of real cooperation on a tremendous scale. That would have been impossible in Germany. Each one said that the other was unimportant.

GERLACH:

You really can't say that as far as the uranium group is concerned. You can't imagine any greater cooperation and trust than there was in that group. You can't say that any one of them said that the other was unimportant.

KORSHING:

Not officially of course.

GERLACH: (Shouting).

Not unofficially either. Don't contradict me. There are far too many other people here who know.

HAHN:

Of course we were unable to work on that scale.

HEISENBERG:

One can say that the first time large funds were made available in Germany was in the spring of 1942 after that meeting with RUST when we convinced him that we had absolutely definite proof that it could be done.

BAGGE:

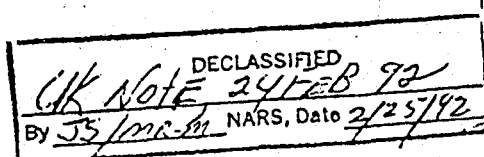
It wasn't much earlier here either.

HARTECK:

We really knew earlier that it could be done if we could get enough material. Take the heavy water. There were three methods, the most expensive of which cost 2 marks per gramme and the cheapest perhaps 50 pfennigs. And then they kept on arguing as to what to do because no one was prepared to spend 10 millions if it could be done for three millions.

HEISENBERG:

On the other hand, the whole heavy water business which I did everything I could to further cannot produce an explosive.



TOP SECRET

- 8 -

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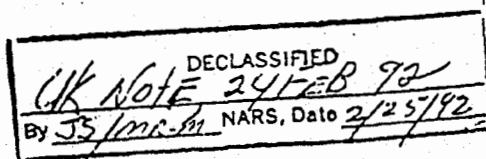
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- 9 -

HARTECK:

Not until the engine is running.

HAHN:

They seem to have made an explosive before making the engine and now they say: "in future we will build engines".

HARTECK:

If it is a fact that an explosive can be produced either by means of the mass spectrograph we would never have done it as we could never have employed 56,000 workmen. For instance, when we considered the CLUSIUS - LINDE business combined with our exchange cycle we would have needed to employ 50 workmen continuously in order to produce two tons a year. If we wanted to make ten tons we would have had to employ 250 men. We couldn't do that.

WEIZSACKER:

How many people were working on V 1 and V 2?

DIEBNER:

Thousands worked on that.

HEISENBERG:

We wouldn't have had the moral courage to recommend to the Government in the spring of 1942 that they should employ 120,000 men just for building the thing up.

WEIZSACKER:

I believe the reason we didn't do it was because all the physicists didn't want to do it, on principle. If we had all wanted Germany to win the war we would have succeeded.

HAHN:

I don't believe that but I am thankful we didn't succeed.

HARTECK:

Considering the figures involved I think it must have been mass-spectrographs. If they had had some other good method they wouldn't have needed to spend so much. One wouldn't have needed so many men.

WIRTZ:

Assuming it was the CLUSIUS method they would never have been able to do anything with gas at high temperatures.

HARTECK:

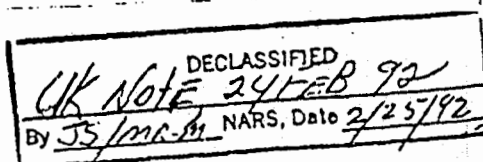
When one thinks how long it took for us to get the nickel separating tube I believe it took nine months.

KORSHING:

It was never done with spectrographs.

HEISENBERG:

I must say I think your theory is right and that it is spectrographs.



~~TOP SECRET~~

Copy No. 1.

- 10 -

WIRTZ:

I am prepared to bet that it isn't.

HEISENBERG:

What would one want 60,000 men for?

KORSHING:

You try and vaporise one ton of uranium.

HARTECK:

You only need ten men for that. I was amazed at what I saw at I.G.

HEISENBERG:

It is possible that the war will be over tomorrow.

HARTECK:

The following day we will go home.

KORSHING:

We will never go home again.

HARTECK:

If we had worked on an even larger scale we would have been killed by the 'Secret Service'. Let's be glad that we are still alive. Let us celebrate this evening in that spirit.

DIEBNER:

Professor GERLACH would be an Obergruppenfuhrer and would be sitting in LUXEMBOURG as a war criminal.

KORSHING:

If one hasn't got the courage, it is better to give up straightaway.

GERLACH:

Don't always make such aggressive remarks.

KORSHING:

The Americans could do it better than we could, that's clear.

(GERLACH leaves the room.)

HEISENBERG:

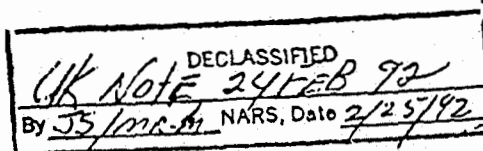
The point is that the whole structure of the relationship between the scientist and the state in Germany was such that although we were not 100% anxious to do it, on the other hand we were so little trusted by the state that even if we had wanted to do it it would not have been easy to get it through.

DIEBNER:

Because the official people were only interested in immediate results. They didn't want to work on a long-term policy as America did.

WEIZSACKER:

Even if we had got everything that we wanted, it is by no means certain whether we would have got as far as the Americans and the English have now. It is not a question that we were very nearly as far as they were but it is a fact that we were all convinced that the



- 11 -

thing could not be completed during this war.

HEISENBERG:

Well that's not quite right. I would say that I was absolutely convinced of the possibility of our making an uranium engine but I never thought that we would make a bomb and at the bottom of my heart I was really glad that it was to be an engine and not a bomb. I must admit that.

WEIZSACKER:

If you had wanted to make a bomb we would probably have concentrated more on the separation of isotopes and less on heavy water.

(HAHN leaves the room)

WEIZSACKER:

If we had started this business soon enough we could have got somewhere. If they were able to complete it in the summer of 1945, we might have had the luck to complete it in the winter 1944/45.

WIRTZ:

The result would have been that we would have obliterated LONDON but would still not have conquered the world, and then they would have dropped them on us.

WEIZSACKER:

I don't think we ought to make excuses now because we did not succeed, but we must admit that we didn't want to succeed. If we had put the same energy into it as the Americans and had wanted it as they did, it is quite certain that we would not have succeeded as they would have smashed up the factories.

DIEBNER:

Of course they were watching us all the time.

WEIZSACKER:

One can say it might have been a much greater tragedy for the world if Germany had had the uranium bomb. Just imagine, if we had destroyed LONDON with uranium bombs it would not have ended the war, and when the war did end, it is still doubtful whether it would have been a good thing.

WIRTZ:

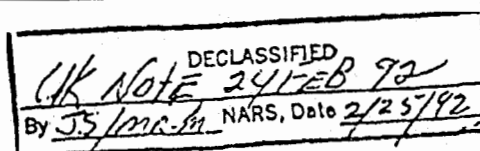
We hadn't got enough uranium.

WEIZSACKER:

We would have had to equip long distance aircraft with uranium engines to carry out airborne landings in the CONGO or NORTH WEST CANADA. We would have had to have held these areas by military force and produce the stuff from mines. That would have been impossible.

HARTECK:

The uranium-content in the stone in the radium mines near GASTEIN was said to be so great that the question of price does not come into it.



- 12 -

BAGGE:

There must be enormous quantities of uranium in UPPER SILESIA. Mining experts have told me that.

DIEBNER:

Those are quite small quantities.

HARTECK:

If they have done it with mass-spectrographs, we cannot be blamed. We couldn't do that. But if they have done it through a trick, that would annoy me. ✓

HEISENBERG:

I think we ought to avoid squabbling amongst ourselves concerning a lost cause. In addition, we must not make things too difficult for HAHN.

HARTECK:

We have probably considered a lot of things which the others cannot do and could use.

WEIZSACKER:

It is a frightful position for HAHN. He really did do it.

HEISENBERG:

Yes. (Pause) About a year ago, I heard from SEGNER (?) from the Foreign Office that the Americans had threatened to drop a uranium bomb on Dresden if we didn't surrender soon. At that time I was asked whether I thought it possible, and, with complete conviction, I replied: 'No'.

WIRTZ:

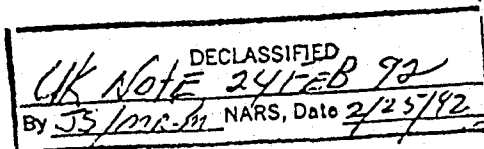
I think it characteristic that the Germans made the discovery and didn't use it, whereas the Americans have used it. I must say I didn't think the Americans would dare to use it.

4. HAHN and LAUE discussed the situation together. HAHN described the news as a tremendous achievement without parallel in history and LAUE expressed the hope of speedy release from detention in the light of these new events.

5. When GERLACH left the room he went straight to his bedroom where he was heard to be sobbing. VON LAUE and HARTECK went up to see him and tried to comfort him. He appeared to consider himself in the position of a defeated General, the only alternative open to whom is to shoot himself. Fortunately he had no weapon and he was eventually sufficiently calmed by his colleagues. In the course of conversation with VON LAUE and HARTECK, he made the following remarks:-

GERLACH:

When I took this thing over, I talked it over with HEISENBERG and HAHN, and I said to my wife: "The war is lost and the result will be that as soon as the enemy enter the country I shall be arrested and taken away". I only did it because, I said to myself, this is a German affair and we must see that German physics are not... oment thought



~~TOP SECRET~~

- 13 -

of a bomb but I said to myself: "If HAHN has made this discovery, let us at least be the first to make use of it!" When we get back to Germany we will have a dreadful time. We will be looked upon as the ones who have sabotaged everything. We won't remain alive long there. You can be certain that there are many people in Germany who say that it is our fault. Please leave me alone.

6. A little later, HAHN went up to comfort GERLACH when the following conversation ensued:-

HAHN:

Are you upset because we did not make the uranium bomb? I thank God on my bended knees that we did not make an uranium bomb. Or are you depressed because the Americans could do it better than we could?

GERLACH:

Yes.

HAHN:

Surely you are not in favour of such an inhuman weapon as the uranium bomb?

GERLACH:

No. We never worked on the bomb. I didn't believe that it would go so quickly. But I did think that we should do everything to make the sources of energy and exploit the possibilities for the future. When the first result, that the concentration was very increased with the cube method appeared, I spoke to SPEER's right hand man, as SPEER was not available at the time, an Oberst GEIST (?) first, and later SAUCKEL at WEIMAR asked me: "What do you want to do with these things?", I replied: "In my opinion the politician who is in possession of such an engine can achieve anything he wants". About ten days or a fortnight before the final capitulation, GEIST (?) replied: "Unfortunately we have not got such a politician".

HAHN:

I am thankful that we were not the first to drop the uranium bomb.

GERLACH:

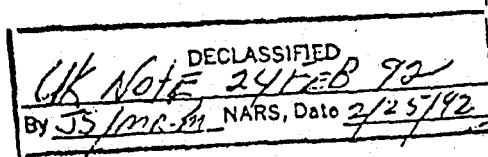
You cannot prevent its development. I was afraid to think of the bomb, but I did think of it as a thing of the future, and that the man who could threaten the use of the bomb would be able to achieve anything. That is exactly what I told GEIST (?), SAUCKEL and MURR. HEISENBERG was there at STUTTGART at the time.

(Enter HARTECK)

Tell me, HARTECK, isn't it a pity that the others have done it?

HAHN:

I am delighted.



TOP SECRET

- 14 -

GERLACH:

Yes, but what were we working for?

HAHN:

To build an engine, to produce elements, to calculate the weight of atoms, to have a mass-spectrograph and radio-active elements to take the place of radium.

HARTECK:

We could not have produced the bomb but we would have produced an engine and I am sorry about that. If you had come a year sooner, GERLACH, we might have done it, if not with heavy water, then with low temperatures. But when you came it was already too late. The enemy's air superiority was too great and we could do nothing.

HAHN, GERLACH and HARTECK go on to discuss their position if they return to Germany and GERLACH considers that they will have to remain here another two years because they will be in danger. HAHN however feels that he could return to Germany without any danger to himself. GERLACH goes on to explain that the Nazi party seemed to think that they were working on a bomb and relates how the Party people in MUNICH were going round from house to house on the 27th or 28th April last telling everyone that the atomic bomb would be used the following day. GERLACH continues:

GERLACH:

I fought for six months against ESAU and BEUTHE (?) taking over all the heavy water and the uranium and having the engine made by the Reichs Anstalt. ESAU told me more than once: 'The cube experiment is my experiment and I am going to see it through and I am going to take everything'. And as I was stubborn and refused to give in, BEUTHE (?) sent that letter to HIMMLER through the S.D. regarding my political attitude. I know all about it and you have no idea the trouble I had with ESAU and what my position was in February and March of last year because of BEUTHE's (?) accusations. I wouldn't have given much for my chances of life at that time. That went on till September or October until ESAU eventually officially gave up his claim to the uranium and the heavy water.

HARTECK:

Of course we didn't really do it properly. Theory was considered the most important thing and experiments were secondary, and then almost unintelligible formulae were written down. We did not carry out experiments with sufficient vigour. Suppose a man like HERTZ had made the experiments, he would have done it quite differently.

GERLACH:

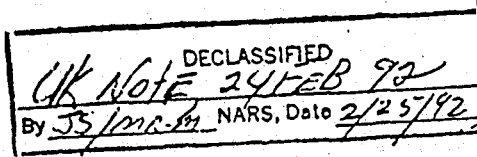
They did make experiments. They measured the emission of heat of uranium.

HARTECK:

For instance if you measure the emission of heat and at the same time make the 23 - minute body.

GERLACH:

What SCHUTZTE (?) was to have done later?



TOP SECRET

- 15 -

HARTECK:
Why was that not done?

GERLACH:
Perhaps it was.

HARTECK:
You might perhaps have boiled the metal, so obtaining a large surface area which would behave towards neutrons as in STERN's experiments. Then you would see that in one case it was better by a few per cent and in another case worse. But such experiments were not made, or rather they wanted to persuade you against it.

HAHN:
HERTZ did that.

GERLACH:
Yes. He had all the material he could find.

HAHN:
When was that - in 1944?

GERLACH:
Yes, the end of 1944. But he had measured the emission of heat already two years before. I just went to HERTZ and said: 'Look here, HERTZ, let's discuss the uranium business'. He said: 'I know nothing about it', so I told him all about it. Then he told me that SCHUTZE had made such heat experiments and then we discussed it and decided that that really was the best thing.

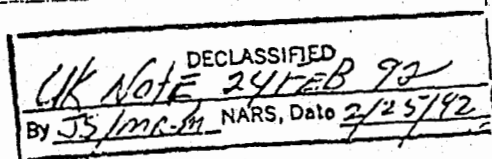
HAHN:
So he (used) a small radium preparation and beryllium preparation

GERLACH:
25 milligrammes and about a hundred grammes of uranium powder (?). He only used powder. When I heard about it, I said straightaway that that was the right method of examining small bodies.

HARTECK:
We had 27 grammes of radium. If we had used - say - 5 grammes of radium as neutron sources we could easily have measured with the best shaped bodies.

GERLACH:
We must not say in front of these two Englishmen that we ought to have done more about the thing. WIRTZ said that we ought to have worked more on the separation of isotopes. It's another matter to say that we did not have sufficient means but one cannot say in front of an Englishman that we didn't try hard enough. They were our enemies, although we sabotaged the war. There are some things that one knows and one can discuss together but that one cannot discuss in the presence of Englishmen.

HAHN:
I must honestly say that I would have sabotaged the war if I had been in a position to do so.



~~TOP SECRET~~

- 16 -

7. HAHN and HEISENBERG discussed the matter alone together. HAHN explained to HEISENBERG that he was himself very upset about the whole thing. He said he could not really understand why GERLACH had taken it so badly. HEISENBERG said he could understand it because GERLACH was the only one of them who had really wanted a German victory, because although he realised the crimes of the Nazis and disapproved of them, he could not get away from the fact that he was working for GERMANY. HAHN replied that he too loved his country and that, strange as it might appear, it was for this reason that he had hoped for her defeat. HEISENBERG went on to say that he thought the possession of the uranium bomb would strengthen the position of the Americans vis-a-vis the Russians. They continued to discuss the same theme as before that they had never wanted to work on a bomb and had been pleased when it was decided to concentrate everything on the engine. HEISENBERG stated that the people in Germany might say that they should have forced the authorities to put the necessary means at their disposal and to release 100,000 men in order to make the bomb and he feels himself that had they been in the same moral position as the Americans and had said to themselves that nothing mattered except that HITLER should win the war, they might have succeeded, whereas in fact they did not want him to win. HAHN admitted however that he had never thought that a German defeat would produce such terrible tragedy for his country. They then went on to discuss the feelings of the British and American scientists who had perfected the bomb and HEISENBERG said he felt it was a different matter in their case as they considered HITLER a criminal. They both hoped that the new discovery would in the long run be a benefit to mankind. HEISENBERG went on to speculate on the uses to which AMERICA would put the new discovery and wondered whether they would use it to obtain control of RUSSIA or wait until STALIN had copied it. They went on to wonder how many bombs existed. The following is the text of this part of the conversation:-

HAHN:

They can't make a bomb like that once a week.

HEISENBERG:

No. I rather think HARTECK was right and that they have just put up a hundred thousand mass-spectrographs or something like that. If each mass-spectrograph can make one milligramme a day, they they have got a hundred grammes a day.

HAHN:

In 1939 they had only made a fraction of a milligramme. They had then identified the '235' through its radio-activity.

HEISENBERG:

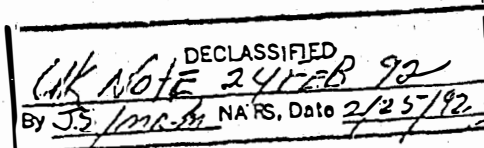
That would give them 30 kilos. a year.

HAHN:

Do you think they would need as much as that?

HEISENBERG:

I think so certainly, but quite honestly I have never worked it out as I never believed one could get pure '235'. I always knew it could be done with '235' with fast neutrons. That's why '235' only can be used



TOP SECRET

- 17 -

as an explosive. One can never make an explosive with slow neutrons, not even with the heavy water machine, as then the neutrons only go with thermal speed, with the result that the reaction is so slow that the thing explodes sooner, before the reaction is complete. It vaporises at 5,000° and then the reaction is already -

HAHN:

How does the bomb explode?

HEISENBERG:

In the case of the bomb it can only be done with the very fast neutrons. The fast neutrons in 235 immediately produce other neutrons so that the very fast neutrons which have a speed of - say - 1/30th that of light make the whole reaction. Then of course the reaction takes place much quicker so that in practice one can release these great energies. In ordinary uranium a fast neutron nearly always hits 238 and then gives no fission.

HAHN:

I see, whereas the fast ones in the 235 do the same as the 238, but 130 times more.

HEISENBERG:

Yes. If I get below 600,000 volts I can't do any more fission on the 238, but I can always split the 235 no matter what happens. If I have pure 235 each neutron will immediately beget two children and then there must be a chain reaction which goes very quickly. Then you can reckon as follows. One neutron always makes two others in pure 235. That is to say that in order to make 10^{24} neutrons I need 80 reactions one after the other. Therefore I need 80 collisions and the mean free path is about 6 centimetres. In order to make 80 collisions, I must have a lump of a radius of about 54 centimetres and that would be about a ton.

HAHN:

Wouldn't that ton be stronger than 20,000 tons of explosive?

HEISENBERG:

It would be about the same. It is conceivable that they could do it with less in the following manner. They would take only a quarter of the quantity but cover it with a reflector which would turn back the fast neutrons. For instance lead or carbon and in that way they could get the neutrons which go out, to come back again. It could be done in that way. It is possible for them to do it like that.

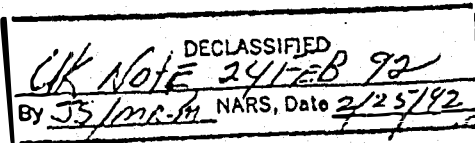
HAHN:

How can they take it in an aircraft and make sure that it explodes at the right moment?

HEISENBERG:

One way would be to make the bomb in two halves, each one of which would be too small to produce the explosion because of the mean free path. The two halves would be joined together at the moment of dropping when the reaction would start. They have probably done something like that.

HEISENBERG went on to complain bitterly that GOUDSMIT had lied to them very cleverly and thinks that he might at least have told him that their experiments in AMERICA were further advanced. They agreed that the secret was kept very well. HAHN remarked on the fact that there had been no publication of work on American scientific



TOP SECRET

- 18 -

journals since January, 1940, but he thought that there had been one published in RUSSIA on the spontaneous fission of uranium with dueterons. HEISENBERG repeated all his arguments saying that they had concentrated on the uranium engine, had never tried to make a bomb and had done nothing on the separation of isotopes because they had not been able to get the necessary means for this. He repeated his story of the alleged threat by America to drop a uranium bomb on DRESDEN and said that he had been questioned by Geheimrat SEGNER(?) of the Foreign Office about this possibility. The conversation concluded as follows:

HEISENBERG:

Perhaps they have done nothing more than produce 235 and make a bomb with it. Then there must be any number of scientific matters which it would be interesting to work on.

HAHN:

Yes, but they must prevent the Russians from doing it.

HEISENBERG:

I would like to know what STALIN is thinking this evening. Of course they have got good men like LANDAU, and these people can do it too. There is not much to it if you know the fission. The whole thing is the method of separating isotopes.

HAHN:

No, in that respect the Americans and in fact all the Anglo-Saxons are vastly superior to them. I have a feeling that the Japanese war will end in the next few days and then we will probably be sent home fairly soon and everything will be much easier than it was before. Who knows that it may not be a blessing after all?

8. The guests decided among themselves that they must not outwardly show their concern. In consequence they insisted on playing cards as usual till after midnight. VON WEIZSACKER, WIRTE, HARTECK, and BAGGE remained behind after the others had gone to bed. The following conversation took place:

BAGGE:

We must take off our hats to these people for having the courage to risk so many millions.

HARTECK:

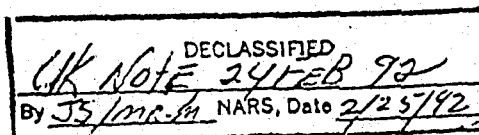
We might have succeeded if the highest authorities had said 'We are prepared to sacrifice everything'.

WEIZSACKER:

In our case even the scientists said it couldn't be done.

BAGGE:

That's not true. You were there yourself at that conference in Berlin. I think it was on 8 September that everyone was asked - GEIGER, BOTHE and you HARTECK were there too - and everyone said that it must be done at once. Someone said 'Of course it is an open question whether one ought to do a thing like that.' Thereupon BOTHE got up and said



TOP SECRET

- 19 -

'Gentlemen, it must be done.' Then GEIGER got up and said 'If there is the slightest chance that it is possible - it must be done.' That was on 8 September '39.

WEIZSACKER:

I don't know how you can say that. 50% of the people were against it.

HARTECK:

All the scientists who understood nothing about it, all spoke against it, and of those who did understand it, one third spoke against it. As 90% of them didn't understand it, 90% spoke against it. We knew that it could be done in principal, but on the other hand we realised that it was a frightfully dangerous thing.

BAGGE:

If the Germans had spent 10 milliard marks on it and it had not succeeded, all physicists would have had their heads cut off.

WIRTZ:

The point is that in Germany very few people believed in it. And even those who were convinced it could be done did not all work on it.

HARTECK:

For instance when we started that heavy water business the CLUSIUS method was apparantly too expensive, but I told ESAU that we should use various methods all at once; there was the one in NORWAY; and that we should have a CLUSIUS plant to produce 2-300 litres a year, that is a small one and then a hot-cold one. As far as I can see we could never have made a bomb, but we could certainly have got the engine to go.

WIRTZ:

KORSHING is really right when he said there wasn't very good co-operation in the uranium group as GERLACH said. GERLACH actually worked against us. He and DIEBNER worked against us the whole time. In the end they even tried to take the engine away from us. If a German Court were to investigate the whole question of why it did not succeed in Germany it would be a very very dangerous business. If we had started properly in 1939 and gone all out everything would have been alright.

HARTECK:

Then we would have been killed by the British 'Secret Service'.

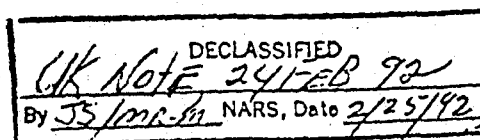
WIRTZ:

I am glad that it wasn't like that otherwise we would all be dead.

(Pause)

BAGGE:

It must be possible to work out at what temperature the thing explodes.



TOP SECRET

- 20 -

HARTECK:

The multiplication factor, with 235 is 2.8, and when one collides with the other how long is the path until it happens? 4 centimetres. R is the radius. Then you have to multiply that by the mean free path and divide it by the square root of the multiplication factor. That should be 3.2. R is about 14 centimetres, the weight is 200 kilogrammes, then it explodes.

9. GERLACH and HEISENBERG had a long discussion in GERLACH's room which went on half the night. In the course of this conversation they repeated most of the statements that had been made in the course of the general conversation downstairs and have been already reported. The following are extracts from the conversation:

GERLACH:

I never thought of the bomb, all I wanted was that we should do everything possible to develop HAHN's discovery for our country.

HEISENBERG went on to stress the fact that they had concentrated on the development of the engine and stated that although the Allies appeared to have concentrated on the bomb they could presumably also make the engine now. He attributed that they failed to perfect the engine to the attacks on the factories in NORWAY. He blamed HITLER for the fact that, as he puts it, 'HAHN's invention has now been taken away from Germany.' He went on:

HEISENBERG:

I am still convinced that our objective was really the right one and that the fact that we concentrated on uranium may give us the chance of collaboration. I believe this uranium business will give the Anglo-Saxons such tremendous power that EUROPE will become a bloc under Anglo-Saxon domination. If that is the case it will be a very good thing. I wonder whether STALIN will be able to stand up to the others as he has done in the past.

GERLACH:

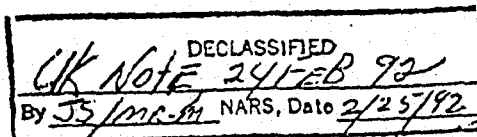
It is not true that we neglected the separation of isotopes - on the contrary, we discussed the whole thing at TUEBINGEN in February, and there was a meeting at MUNICH. CLUSIUS, HARTECK and I said that this photo-chemical thing must be done. It took till the end of the year before the people who could do it were got together and the spectrograph obtained and special accommodation acquired, as the LITZ(?) Institute had been smashed up.

HEISENBERG:

You shouldn't take remarks like the one KORSHING made too seriously. He now thinks because the Americans have done it that he could have succeeded in separating isotopes if he had had more means at his disposal. That is of course sheer and utter nonsense. His experiment was interesting, that's why we carried it out, but I am convinced that the Americans have done it by completely other methods.

GERLACH:

If Germany had had a weapon which would have won the war, then Germany would have been in the right and the others in



~~TOP SECRET~~

Copy No. 1.

- 21 -

the wrong, and whether conditions in Germany are better now than they would have been after a HITLER victory -

HEISENBERG:

I don't think so. On the other hand, the days of small countries are over. Suppose HITLER had succeeded in producing his EUROPE and there had been no uranium in EUROPE.

GERLACH:

If we had really planned a uranium engine - in the summer of 1944 we would not have had a bomb - and that had been properly handled from a propaganda point of view -

HARTECK:

That might have been a basis for negotiation. It would have been a basis for negotiation for any other German Government, but not for HITLER.

GERLACH:

I went to my downfall with open eyes, but I thought I would try and save German physics and German physicists, and in that I succeeded.

HEISENBERG:

Perhaps German physics will be able to collaborate as part of a great Western group.

GERLACH then went on to repeat how ESAU had tried to get all the heavy water and uranium in order to have the experiments made at the REICHSANSTALT. HEISENBERG then continued.

HEISENBERG:

Now that the whole thing has been made public, I assume that in a comparatively short time they will tell us what is to happen to us as I can't see the sense in keeping us detained as it is obvious that they are much further advanced than we were. There may be some details in which we could help them as they appear to have done very little in the heavy water line.

GERLACH:

The only thing to do now would be to say: 'We will get all the uranium people together CHADWICK, FERMI etc., and let them discuss it'.

HEISENBERG:

I wouldn't be surprised if in a comparatively short time we meet some of these people and perhaps something will come of it. It seems to me that the sensible thing for us to do is to try and work in collaboration with the Anglo-Saxons. We can do that now with a better conscience because one sees that they will probably dominate EUROPE. It is clear that people like CHADWICK and CHERWELL have considerable influence.

(Pause)

GERLACH:

I would really like to know how they have done it.

HEISENBERG:

It seems quite clear to me that it is the separation of isotopes. Although it is possible as HARTECK says that it is done with a hundred thousand mass-spectrographs.

TOP SECRET

Copy No. 1.

- 22 -

GERLACH:

I am not sure whether perhaps the BAGGE method -

HEISENBERG:

That would never produce pure 235. The BAGGE method is not bad for enriching but the centrifuge is good for that too.

GERLACH:

The BAGGE method enriches more.

HEISENBERG:

Yes. It is a terrific lot to expect pure 235.

GERLACH:

How pure must it be?

HEISENBERG:

I should say 80% 235, and 20% 238 is alright, 50/50 would be alright, but there must not be much more 238 than 235.

10. WIRTZ and WEIZSACKER discussed the situation together in their room. VON WEIZSACKER expressed the opinion that none of them had really worked seriously on uranium with the exception of WIRTZ and HARTECK. He also accused GERLACH and DIEBNER of sabotage. WIRTZ expressed horror that the Allies had used the new weapon. They went on to discuss the possibility of the Russians discovering the secret and came to the conclusion that they would not succeed under ten years. They went on as follows:

WIRTZ:

It seems to me that the political situation for STALIN has changed completely now.

WEIZSACKER:

I hope so. STALIN certainly has not got it yet. If the Americans and the British were good Imperialists they would attack STALIN with the thing tomorrow, but they won't do that, they will use it as a political weapon. Of course that is good, but the result will be a peace which will last until the Russians have it, and then there is bound to be war.

At this point HEISENBERG joined WIRTE and WEIZSACKER. The following remarks were passed:

WIRTZ:

These fellows have succeeded in separating isotopes. What is there left for us to do?

HEISENBERG:

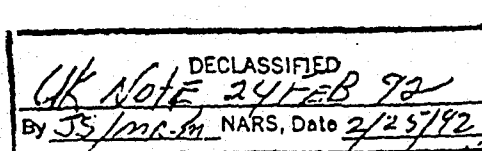
I feel convinced that something will happen to us in the next few days or weeks. I should imagine that we no longer appear to them as dangerous enemies.

WEIZSACKER:

No, but the moment we are no longer dangerous we are also no longer interesting. It appears that they can get along perfectly well by themselves.

HEISENBERG:

Perhaps they can learn something about heavy water from us. But it can't be much - they know everything.



TOP SECRET

- 23 -

WEIZSACKER:

Our strength is now the fact that we are 'un-Nazi'.

HEISENBERG:

Yes, and in addition, uranium was discovered by HAHN and not by the Americans.

WEIZSACKER:

I admit that after this business I am more ready to go back to GERMANY, in spite of the Russian advance.

WIRTZ:

My worst fears have been realised with regard to the complications which will now arise about us.

HEISENBERG:

I believe that we are now far more bound up with the Anglo-Saxons than we were before as we have no possibility of switching over to the Russians even if we wanted to.

WIRTZ:

They won't let us.

HEISENBERG:

On the other hand we can do it with a good conscience because we can see that in the immediate future GERMANY will be under Anglo-Saxon influence.

WIRTZ:

That is an opportunist attitude.

HEISENBERG:

But at the moment it is very difficult to think otherwise because one does not know what is better.

WEIZSACKER:

If I ask myself for which side I would prefer to work of course I would say for neither of them.

11. DIEBNER and BAGGE also discussed the situation alone together as follows:

BAGGE:

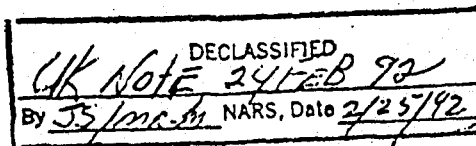
What do you think will happen to us now?

DIEBNER:

They won't let us go back to GERMANY. Otherwise the Russians will take us. It is quite obvious what they have done, they have just got some system other than ours. If a man like GERLACH had been there earlier, things would have been different.

BAGGE:

GERLACH is not responsible, he took the thing over too late. On the other hand it is quite obvious that HEISENBERG was not the right man for it. The tragedy is that KORSHING is right in the remarks he made to GERLACH. I think it is absurd for WEIZSACKER to say he did not want the thing to succeed. That may be so in his case, but not for all of us. WEIZSACKER was not the right man to have done it. HEISENBERG could not convince anyone that



TOP SECRET

- 24 -

the whole thing depended on the separation of isotopes. The whole separation of isotopes was looked upon as a secondary thing. When I think of my own apparatus - it was done against HEISENBERG's wishes.

DIEBNER:

Now the others are going to try and make up to the Major and sell themselves. Of course they can do what they like with us now, they don't need us at all.

BAGGE:

I won't do it. I will work on cosmic rays. Do you remember how VON WEIZSACKER said in BELGIUM 'When they come to us we will just say that the only man in the world who can do it is HEISENBERG.' VON WEIZSACKER is very upset about the whole thing.

(Pause)

BAGGE:

You can't blame SPEER as none of the scientists here forced the thing through. It was impossible as we had no one in GERMANY who had actually separated uranium. There were no mass-spectrographs in GERMANY.

DIEBNER:

They all failed. WALCHER(?) and HERTZOG(?) wanted to build one, but they didn't succeed.

12. Although the guests retired to bed about 1.30, most of them appear to have spent a somewhat disturbed night judging by the deep sighs and occasional shouts which were heard during the night. There was also a considerable amount of coming and going along the corridors.

III. 7 August.

1. On the morning of 7 August the guests read the newspapers with great avidity. Most of the morning was taken up reading these.

2. In a conversation with DIEBNER, BAGGE said he was convinced it had been done with mass-spectrographs.

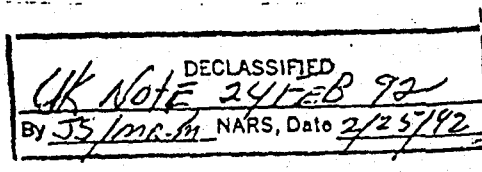
3. HAHN, HEISENBERG and HARTECK discussed the matter in the following conversation:

HAHN:

What can one imagine happens when an atomic bomb explodes? Is the fission of uranium 1 ⁰/100, 1%, 10% or 100%?

HEISENBERG:

If it is 235, then for all practical purposes it is the whole lot, as then the reaction goes much quicker than the vaporisation as for all practical purposes it goes with the speed of light. In order to produce fission in 10^{25} atoms you need 80 steps in the chain so that the whole reaction is complete in 10^{-8} seconds. Then each neutron that flies out of one atom



TOP SECRET

Copy No. 1.

- 25 -

makes two more neutrons when it hits another uranium 235. Now I need 10^{25} neutrons and that is 2^{80} . I need 80 steps in the chain and then I have made 2^{80} neutrons. One step in the chain takes the same time as one neutron to go 5 centimeters that is 10^{-9} seconds, so that I need about 10^{-8} seconds, so that the whole reaction is complete in 10^{-8} seconds. The whole thing probably explodes in that time.

(Pause)

HEISENBERG:

They seem to have made the first test only on 16 July.

HAHN:

But they must have had more material then. They could not make a 100 kilogrammes of new uranium 235 every fortnight.

HEISENBERG:

They seem to have had two bombs, one for the test and the other for -

HARTECK:

But in any case the next one will be ready in a few months. STALIN's hopes of victory will have been somewhat dashed.

HAHN:

That's what pleases one about the whole thing. If Niels BOHR helped, then I must say he has gone down in my estimation.

4. GERLACH and VON LAUE discussed the position of Niels BOHR and the part he had played. GERLACH said he was very upset about this as he had personally vouched for BOHR to the German Government. VON LAUE said that one could not believe everything that appeared in the newspapers.

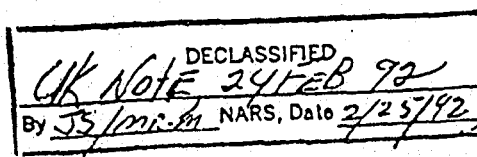
5. In a conversation with VON LAUE, VON WEIZSACKER said it will not be long before the names of the German scientists appear in the newspapers and that it would be a long time before they would be able to clear themselves in the eyes of their own countrymen. He went on to quote from the newspaper that we were unable to control the energy, from which he assumed that we were not yet in possession of a uranium engine, so that their work would still be of considerable value. He ended by saying:

WEIZSACKER:

History will record that the Americans and the English made a bomb, and that at the same time the Germans, under the HITLER regime, produced a workable engine. In other words, the peaceful development of the uranium engine was made in GERMANY under the HITLER regime, whereas the Americans and the English developed this ghastly weapon of war.

to DIEBNER

6. GERLACH continued to complain about the attitude of KORSHING the evening before. They went on to discuss the methods by which information concerning their work may have leaked out. They



TOP SECRET

Copy No. 1.

- 26 -

reminded themselves that HEISENBERG and VON WEIZSACKER once spent four weeks in SWITZERLAND and had discussions with SCHERRER. GERLACH and DIERNER went on to discuss the political aspects of the possession of the atomic bomb, and expressed satisfaction that the Russians appear not to have the secret.

7. In a conversation between WIRTE, VON WEIZSACKER and HEISENBERG, HEISENBERG repeated that in July 1944 a senior SS official had come to him and asked him whether he seriously believed that the Americans could produce an atomic bomb. He said he had told him that in his opinion it was absolutely possible as the Americans could work much better and quicker than they could. VON WEIZSACKER again expressed horror at the use of the weapon and HEISENBERG replied that had they produced and dropped such a bomb they would certainly have been executed as War Criminals having made the "most devilish thing imaginable".

8. At 6 o'clock the guests all heard Sir John Anderson speak on the wireless. The subsequent conversation was merely a repetition of previous ones, and was chiefly concerned with somewhat caustic comments on the use to which the new discovery had been put. HEISENBERG's final comment was:

HEISENBERG:

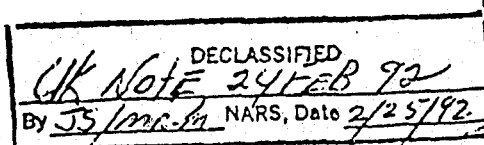
If the Americans had not got so far with the engine as we did - that's what it looks like - then we are in luck. There is a possibility of making money.

9. Later, GERLACH and HEISENBERG had a long discussion in which they discussed the future. GERLACH said he hoped they would be able to discuss the whole question with people like CHADWICK. HEISENBERG said he felt sure something of the sort would be done, but he felt they should wait and see what happened. They went on to discuss references in the newspapers to the alleged work which had been done in GERMANY on the bomb, and said they hoped it would be possible to prevent the newspapers from continuing to make such statements. They ended their conversation by expressing surprise that they had known nothing about the preparations that had been made in AMERICA. HEISENBERG said that someone from the German Foreign Office had told him that 70% of their Gestapo agents in SPAIN had just stayed there to work for the other side.

10. HEISENBERG, VON WEIZSACKER, WIRTE and HARTECK also discussed the future and came to the conclusion that they would probably be sent back to HECHINGEN and allowed to continue their work. They realised however, that we might be afraid of their telling the Russians too much. In this connection they mentioned that BOPP, JENSEN(?) and FLUEGGE(?) could also tell them a lot if they wanted to. They came to the conclusion that GROTH was probably in ENGLAND.

IV. The Memorandum Signed by the Guests.

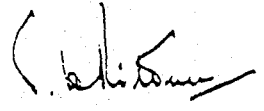
All the guests have been extremely worried about the press reports of the alleged work carried out in GERMANY on the atomic bomb. As they were so insistent that no



TOP SECRET

- 27 -

such work had been carried out, I suggested to them that they should prepare a memorandum setting out details of the work on which they were engaged, and that they should sign it. There was considerable discussion on the wording of this memorandum, in the course of which DIEBNER remarked that he had destroyed all his papers, but that there was great danger in the fact that SCHUMANN had made notes on everything. GERLACH wondered whether VOEGLER had also made notes. From the conversation it did however appear that they had really not worked on a bomb themselves, but they did state that the German Post Office had also worked on uranium, and had built a cyclotron at MIEHRSDORF(?). GERLACH stated that the SCHWAB(?) Group also had some uranium, and he remembered that the SS had come to him once and tried to obtain large quantities of heavy water. HARTECK also mentioned an SS Colonel whose name he could not remember, who had previously been with MEIK(?), who had shown considerable interest in the subject. WIRTZ remarked that they should remember that there was a patent for the production of such a bomb at the KAISER WILHELM Institute for Physics. This patent was taken out in 1941. Eventually, a memorandum was drawn up and a photostat copy of it is attached to this report. WIRTZ, WEIZSACKER, DIEBNER, BAGGE and KORSHING at first did not want to sign it, but were eventually persuaded to do so by HEISENBERG.


Major.

FARM HALL,
GODMANCHESTER.

11 August, 1945.

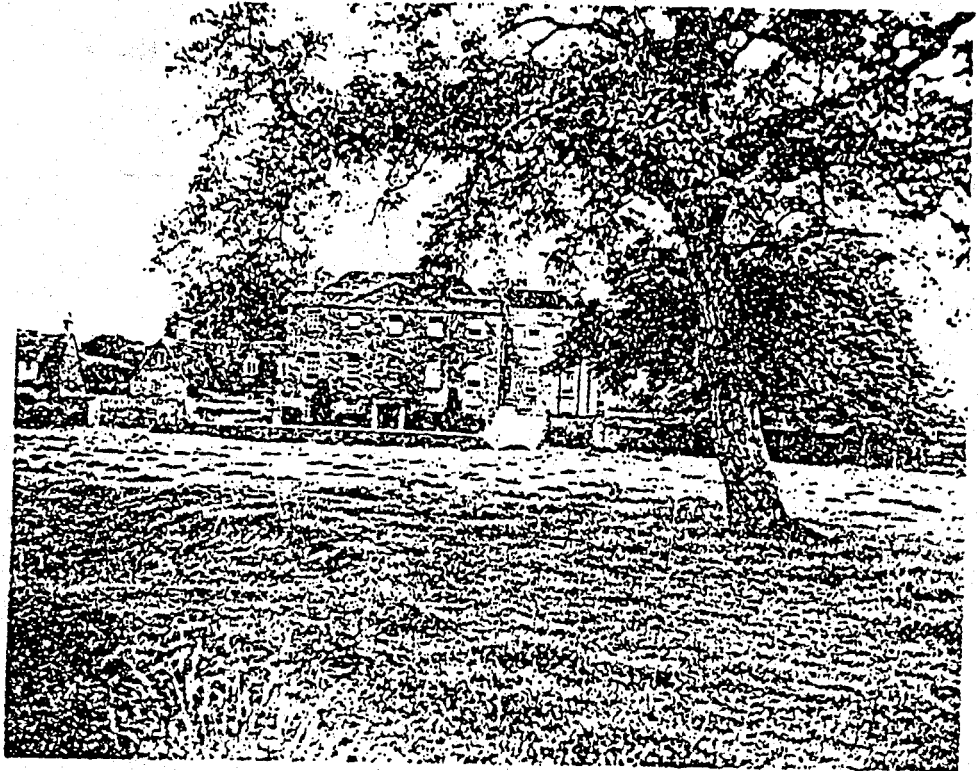
TOP SECRET

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PHOTOGRAPHS OF FARM HALL AND THE GUESTS

DETAINED THERE

TOP SECRET



FARM HALL

DECLASSIFIED
CK Note 24 FEB 92
By SS/mc-h NARS, Date 2/25/92

TOP SECRETPROFESSOR OTTO HAHN

The most friendly of the detained professors. Has a very keen sense of humour and is full of common sense. He is definitely friendly disposed to England and America. He has been very shattered by the announcement of the use of the atomic bomb as he feels responsible for the lives of so many people in view of his original discovery. He has taken the fact that Professor MEITNER has been credited by the press with the original discovery very well although he points out that she was in fact one of his assistants and had already left Berlin at the time of his discovery.

HAHNPROFESSOR MAX von LAUE

A shy, mild-mannered man. He cannot understand the reason for his detention as he professes to have had nothing whatever to do with uranium or the experiments carried out at the Kaiser Wilhelm Institute. He is rather enjoying the discomfort of the others as he feels he is in no way involved. He is extremely friendly and is very well disposed to England and America.

VON LAUE

SECRET

PROFESSOR WALTHER GERLACH

Has always been very cheerful and friendly, but from his monitored conversations is open to suspicion because of his connections with the Gestapo. As the man appointed by the German Government to organise the research work on uranium, he considers himself in the position of a defeated general and appeared to be contemplating suicide when the announcement was made.

GERLACH

PROFESSOR W. HEISENBERG

Has been very friendly and helpful ever since his detention. He has taken the announcement of the atomic bomb very well indeed and seems to be genuinely anxious to cooperate with British and American scientists.

HEISENBERG

TOP SECRETPROFESSOR P. HARTECK

A very charming personality. Appears to be interested only in his research work. He has taken the announcement of the atomic bomb very philosophically and has put forward a number of theories as to how it has been done.

HARTECKPROFESSOR C.F. von WEIZSACKER

Outwardly very friendly and appears to be genuinely cooperative. He has stated, both directly and in monitored conversations, that he was sincerely opposed to the Nazi regime and anxious not to work on an atomic bomb. Being the son of a diplomat he is something of one himself. It is difficult to say whether he is genuinely prepared to work with England and America.

von WEIZSACKER

TOP SECRETDOCTOR K. WIRTZ

A clever egoist. Very friendly on the surface, but cannot be trusted. He will cooperate only if it is made worth his while.

WIRTZ

DOCTOR E. BAGGE

A serious and very hard-working young man. He is completely German and is unlikely to cooperate.

BAGGE



DOCTOR H. KORSCHING

A complete enigma.
On the announcement of the use
of the atomic bomb he passed
remarks upon the lack of
courage among his colleagues
which nearly drove GERLACH
to suicide.

KORSCHING



DOCTOR K. DIEBNER

Outwardly friendly but has
an unpleasant personality and
cannot be trusted.

DIEBNER

8 August 1945

Da die Presseberichte der letzten Tage über die angeblichen Arbeiten an der Atombombe in Deutschland zum Teil unrichtige Angaben enthalten, möchten wir die Entwicklung der Arbeiten zum Uranproblem im Folgenden kurz beschreiben.

1) Die Atomkernspaltung beim Uran ist im Dezember 1938 von Hahn und Strassmann am Kaiser-Wilhelm-Institut für Chemie in Berlin entdeckt worden. Sie war die Frucht rein wissenschaftlicher Untersuchungen, die mit praktischen Zielen nichts zu tun hatten. Erst nach ihrer Veröffentlichung wurde ungefähr gleichzeitig in verschiedenen Ländern entdeckt, daß sie eine Kettenreaktion der Atomkerne und damit zum ersten Mal eine technische Ausnutzung der Kern-Energien ermöglichen könnte.

2) Beim Beginn des Krieges wurde in Deutschland eine Gruppe von Forschern zusammengerufen, deren Aufgabe es war, die praktische Ausnutzbarkeit dieser Energien zu untersuchen. Die wissenschaftlichen Vorarbeiten hatten gegen Ende 1941 zu dem Ergebnis geführt, daß es möglich sein werde, die Kern-Energien zur Wärme-Erzeugung und damit zum Betrieb von Maschinen zu benutzen. Dagegen schienen die Voraussetzungen für die Herstellung einer Bombe im Rahmen der technischen Möglichkeiten, die Deutschland zur Verfügung standen, damals nicht gegeben zu sein. Die weiteren Arbeiten konzentrierten sich daher auf das Problem der Maschine, für die außer Uran "schweres" Wasser notwendig ist.

3) Für diesen Zweck wurden die Anlagen der Norsk Hydro in Rjukan zur Produktion von größeren Mengen von schwerem Wasser ausgebaut. Die Angriffe auf diese Anlagen, zuerst durch ein Sprengkommando, dann durch die R.A.F., haben diese Produktion gegen Ende 1943 zum Erliegen gebracht. Gleichzeitig war

4) Gleichzeitig wurden in Freiburg, später in Celle, Versuche angestellt, durch Anreicherung des seltenen Isotops 235 die Benutzung des schweren Wassers zu umgehen.

5) Mit den vorhandenen Mengen des schweren Wassers wurden zuerst in Berlin, später in Haigerloch (Württemberg), die Versuche über die Energie-Gewinnung fortgeführt. Gegen Ende des Krieges waren diese Arbeiten so weit gediehen, daß die Aufstellung einer Energie liefernden Apparatur wohl nur noch kurze Zeit in Anspruch genommen hätte.

er k u n g e n

Mahn'sche Entdeckung ist kurz nach ihrer in vielen Laboratorien, insbesondere in Staaten, nachgeprüft worden. Auf die großen der Uranspaltung frei werden, wurde von Forschern, zuerst wohl von Meitner und Frisch, gen hatte Professor Meitner bereits ein hal- Entdeckung Berlin verlassen und war selbst nicht beteiligt.

sein chemischen Arbeiten des Kaiser-Wilhelm-Institut für Chemie über die Folgeprodukte der Uranspaltung sind ungehindert fortgeführt und veröffentlicht worden. Unter 2) genannten wissenschaftlichen Vorarbeiten zur Energie-Gewinnung umfaßten Untersuchungen: Theoretische Abschätzung über den Ablauf der Reaktion von Gemischen aus Uran und schwerem Wasser. Untersuchungen über die Absorptionsvermögens von schwerem Wasser für Untersuchungen über die bei der Spaltung frei werdenden Neutronen. Untersuchungen über die Neutronenvermehrung aus Uran und schwerem Wasser. - Es sei noch festgestellt, daß den Untersuchungen etwa an Deutschland über das Uranproblem bekannt

Schwer-Wasser-Produktion in Rjukan wurde zu konsequenten Ausbau der schon vorhandenen durch den Einbau von in Deutschland entwickelten Austausch-Öfen auf etwa 220 Liter pro Die Stickstoffproduktion des Werkes wurde wesentlich vermindert. Mit Uran und Radium gearbeitet worden.

Isotopentrennung wurden verschiedene Verfahren. Clusius'sche Trennrohr erwies sich als unzureichend. Zentrifuge ergab eine geringe Anreicherung. Die anderen Verfahren hatten bis zum Ende des Jahres keine sicheren positiven Ergebnisse geliefert. Trennung in großem Maßstab ist nicht in Angriff

Es wurde eine Energie liefernde Apparatur zwar ohne schweres Wasser, jedoch bei sehr künstlich-radioaktive Substanzen in großer Menge hergestellt.

Zu 3) - 5) Im Ganzen sind von den deutschen Behörden (zuerst Heereswaffenamt, später Reichs-Forschungsrat) für das Uranvorhaben Mittel bereit gestellt worden, die gegenüber den von den Alliierten eingesetzten Mitteln verschwindend gering sind. Die Anzahl der Menschen, die an der Entwicklung beteiligt waren, (Wissenschaftler und Hilfskräfte in Instituten und Industrie), hat wohl in keiner Phase einige Hundert überschritten.

Otto Hahn.

(Otto Hahn)

M. v. Laue

(M.v.Laue)*

Walther Gerlach.

(Walther Gerlach)

W. Heisenberg

(W.Heisenberg)

P. Harteck

(P.Harteck)

C.F.v. Weizsäcker

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K. Wirtz

(K.Wirtz)

E. Bause

(E.Bause)

H. Korsching

(H.Korsching)

K. Diebner

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* Meine Unterschrift bedeutet, daß ich mich für die Richtigkeit der obigen Darstellung mit- verbürge, nicht aber, daß ich an den darin erwähnten Arbeiten irgend welchen Anteil gehabt habe.

M. v. Laue

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TOP SECRET

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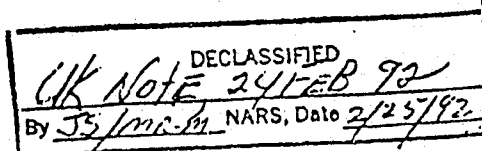
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W. HEIDENBERG

P. HARTACK

C.F. v. WEIZSACKER

K. WIRTZ.

E. HÄGGE

H. KORSCHING

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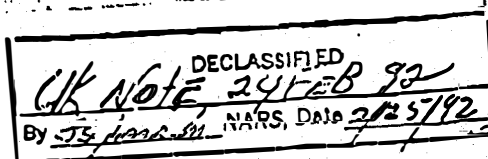
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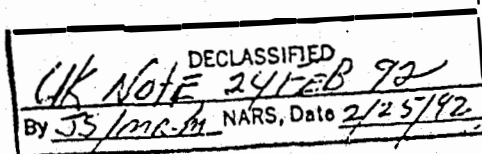
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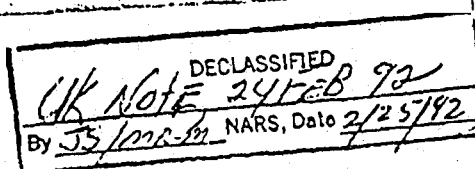
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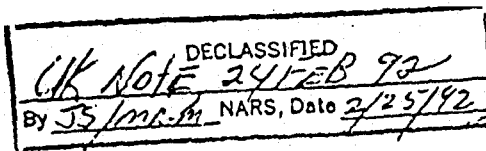
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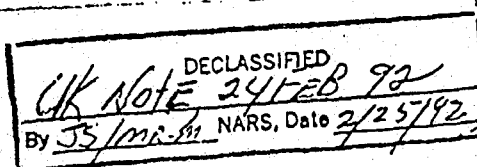
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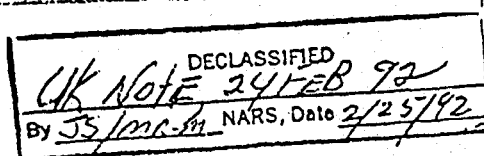
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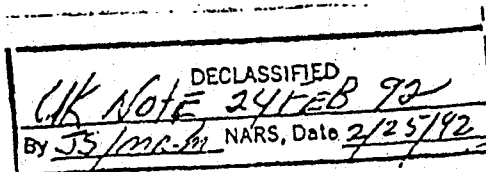
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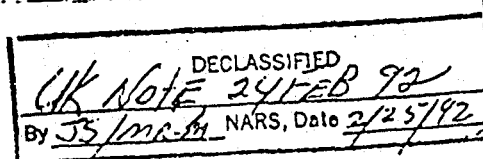
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TOP SECRET

AMERICAN EMBASSY
OFFICE OF THE MILITARY ATTACHE
1. GROSVENOR SQUARE, W. 1,
LONDON, ENGLAND

1 September 1945

Subject: Transmittal of Operation Epsilon.

To : Major F. J. Smith, Room 5004, New War Dept. Bldg.,
Washington, D. C.

Transmitted herewith for your information is a
copy of Operation Epsilon, Ref: F.H. 5., 8-22 August 1945.

For the Military Attache:

H. K. Calvert

H. K. CALVERT,
Major, F.A.,
Assistant to the Military Attache.

Incl:
As listed above.

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DECLASSIFIED
UK Note 24 FEB 92
By 55/mr-m NARS, Date 2/25/92

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7-
TOP SECRET

REPRODUCED AT THE NATIONAL ARCHIVES Copy No. 1.

Capt. Davis
For General Groves.

Ref: F.H. 5.

To: Mr. M. PERRIN and Lt. Cdr. WELSH.
From: Major T.H. RITTNER.

OPERATION EPSILON.

(8th-22nd August, 1945).

I. GENERAL.

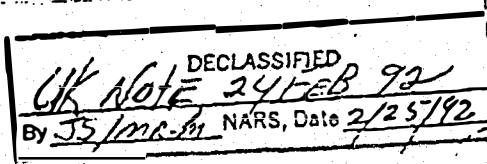
1. The guests have recovered from the initial shock they received when the news of the atomic bomb was announced. They are still speculating on the method used to make the bomb and their conversations on this subject, including a lecture by HEISENBERG, appear later in this report. The translation of the technical matter has been very kindly undertaken by a member of the Staff of D.S.I.R. The original German text of HEISENBERG's lecture has been reproduced as an appendix to this report.
2. There is a general air of expectancy as the guests now feel there is no further need for their detention and they assume that they will shortly be told what plans have been made for their future and that they will soon be reunited with their families. They are eagerly awaiting replies to their letters which have now been despatched.
3. The declaration of the surrender of JAPAN was greeted with relief rather than enthusiasm. The guests listened with great interest to the King's broadcast on "VJ" Day and all stood rigidly to attention during the playing of the National Anthem.
4. Sir CHARLES DARWIN paid a visit to FARM HALL on 18th August. This was the first time the guests had had contact with a scientist since their detention and they were delighted to have the opportunity of meeting him. Conversations during the visit and subsequent reactions are dealt with elsewhere in this report.

II. The Future.

1. A number of the guests have discussed their attitude towards co-operation with the Allies. The following conversation took place between HEISENBERG, VON WEISZACKER and GERLACH on 10th August.

GERLACH:

If you were faced with the opportunity of co-operation in order to make the bomb useful for mankind, would you do it?



- 2 -

HEISENBERG:

It is unlikely to arise in that form, as it can't be done. "Useful for mankind" means only that the Russians shouldn't get it, but that can't be prevented as the Russians are certain to have the atom bomb in five year's time, possibly in a year. From what CHADWICK said in that interview I would say that the Allies will try and form a Control Commission with the Russians, and they will control the manufacture of uranium 235, and the uses to which it is put. They will try and come to a peaceful understanding with the Russians in some way. I would have no objection if one could be included in such an organisation so that we could share, in some way, control of it for GERMANY. I imagine that there will be some sort of organisation embracing all the nuclear physicists in the world.

WEIZSACKER:

What are your feelings about that?

GERLACH:

I would join.

2. HAHN and VON WEISZACKER discussed their future in the following conversation on 11th August.

HAHN:

I have been thinking and it is quite possible that they will not send us back to GERMANY unless we undertake to do quite different work, and they will say: "Stay here, if you like we will let your wives come over, but you must be a long way from RUSSIA."

VON WEIZSACKER:

If I was faced with the alternative of working on uranium in ENGLAND or AMERICA, or not working on uranium in GERMANY, I would very quickly choose, not working on uranium in GERMANY.

HAHN:

So I should think.

WEIZSACKER:

In fact I think I should say "Even if you keep me here I would prefer not to work on uranium for the time being. I would like to wait a bit and see whether I can overcome the antipathy I have to the bomb."

HAHN:

I have really come to the conclusion, sad as it is, that as far as I am concerned, I shall probably do nothing more. I might have been able to do something if they had let me carry on with my harmless chemistry; assuming I had been sent 10 grammes of this stuff which had in some way given off something without exploding, then one could have that stuff and use it as an indicator for chemistry or even biology; I would enjoy that and then perhaps I could help a bit, but I don't see anything for me.