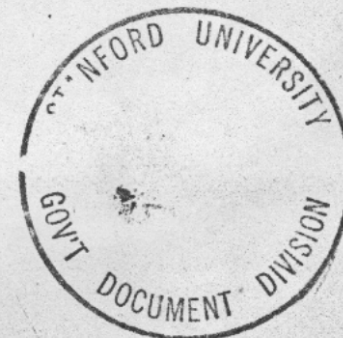


In the Matter of
J. ROBERT OPPENHEIMER

TRANSCRIPT OF HEARING
BEFORE
PERSONNEL SECURITY
BOARD

Washington, D. C.

April 12, 1954, through May 6, 1954



The WITNESS. It is to a degree. In order to be effective an enemy's defenses must be saturated. By this there must be a certain number of attacks made to confuse and confound his defense. This establishes really the minimum number of aircraft. This is sort of "get rich quick" air tactics. Added to that is the matter of flexibility to take care of local situations. This also could require a number of aircraft. What I am trying to say is that if you have a weapon that is 10 times as great as your old weapon, you cannot reduce your number of aircraft by 10 automatically. There are other considerations.

Mr. GRAY. I think I have only one more question. During the period with respect to which you have testified—perhaps I should be more specific—during the period 1947 to January 1950, did you have a serious question in your mind, based on what information you had, that the Air Force might have difficulty in developing a carrier which was capable of transporting and delivering the weapon which was under debate?

The WITNESS. This is the atomic bomb in that period and the thermonuclear bomb coming up?

Mr. GRAY. That is correct.

The WITNESS. Of course, there was no question about carrying the atomic bomb.

Mr. GRAY. Yes.

The WITNESS. There was no question among the combat bombardiers about their ability to deliver it. There was a great deal of impassioned debate on this subject, but I have never heard a bombardment commander say he could not deliver the weapon.

Mr. GRAY. This is the atomic weapon?

The WITNESS. This is the atomic weapon. We didn't know what the size and the weight and shape of this thermonuclear weapon would be, but as soon as the President directed that we determine the feasibility of it, the Air Force went immediately into a study of deliverability, and we were prepared with a series of devices to carry it. Some of them were not good, but they were a start. * * *

Mr. GRAY. In October 1949, based on what you know—how much or how little—about the technical difficulties in bringing about such a weapon which the Air Force might use, was there any doubt in your mind about your ability to design a plane, a carrier which would be effective?

The WITNESS. That a plane could be designed?

Mr. GRAY. Yes.

The WITNESS. No, sir; I don't think there was any such doubt. You can design as big an airplane as you want, I am sure.

Mr. GRAY. I am asking you this question because you are an airman.

The WITNESS. Yes, sir. My answer is, No, there was no doubt of the ability of the aircraft industry to design an airplane to carry almost anything. The important thing is that we get to work on it, and that we work together with the Atomic Energy Commission so that we can keep the size and shape together to come up with a good device in a timely manner.

Mr. GRAY. Dr. Evans.

Dr. EVANS. General Wilson, it has been mentioned a number of times in this meeting this morning that you were a dedicated airman. I wish to state for the record that this board does not think there is any approbrium, and I don't think anybody in this room thinks there is any approbrium connected with being a dedicated airman.

The WITNESS. Thank you, sir. I invented the term.

Mr. SILVERMAN. If there was any suggestion that I meant any such thing, I certainly did not.

Mr. GRAY. I think Dr. Evans wishes everybody here to take judicial notice that there may have been people present who may have been interested in the Army at one time.

The WITNESS. I understand, sir.

Dr. EVANS. One of the possible reasons there may have been opposition to this thermonuclear weapon was possibly that Russia had fewer targets for that thing than we had. Was that ever mentioned? It would be like killing a mosquito with a sledge hammer.

The WITNESS. I have heard this sort of debate, but not seriously in official circles; no, sir.

Dr. EVANS. Do you have an idea now that the thermonuclear weapon was developed far more quickly than you would have had reason at one time to think it might be?

The WITNESS. Yes. I was agreeably surprised. Yes, sir.

Dr. EVANS. That is all I have.

REDIRECT EXAMINATION

By Mr. ROBB:

Q. General, there are a couple of questions suggested by the chairman's questions.

We have heard some discussion here by various witnesses about tactical bombing versus strategic bombing. I wonder if you could give us a little information about what the distinction is, what the two kinds of bombing are, so we have it from somebody who knows what he is talking about?

A. There is no real distinction. It is an over-simplification of terms. I think that what is meant by tactical bombing is bombing in immediate support of ground troops, something of this sort. Actually my view and the view of my school is that all bombing is directed toward a strategic goal, and that bombing done on the battlefield should be timed with bombing done against the enemy's will to resist, so that both will be mutually supporting. Short of a lecture, sir, I hope that will suffice.

Q. Is the thermonuclear weapon considered to be a tactical weapon or a strategic weapon, or both?

A. If you will accept my definition, which is not an accurate one, that a tactical weapon is in support of ground troops on the battlefield, then you would assume that a thermonuclear weapon would be a strategic weapon. We don't like to use these terms. We prefer not to, because they are all directed to a strategic end.

Q. Is the nuclear powered ship, using the term perhaps unprofessionally, a strategic or tactical weapon?

A. For the same reason you can't differentiate. It would be a highly flexible performing airplane.

Q. I am talking about a ship.

A. Oh, a ship. I beg your pardon. I don't think you can differentiate there either. It depends on how they are employed.

Mr. ROBB. That is all.

Mr. SILVERMAN. I think I have one question.

RE-CROSS-EXAMINATION

By Mr. SILVERMAN:

Q. I think the chairman asked you about whether you had any question in October 1949 about the possibility of determining an aircraft large enough to carry a thermonuclear weapon. I am not sure in my own thinking. We are talking about a big hydrogen bomb?

A. I understand, sir.

Q. I think you said you didn't have any doubt that it could be done?

A. It could be designed, yes.

Q. Will you give us some idea about how long it takes from design of a plane to production?

A. It varies of course. The cycle used to be about 3 years. When I left the business it had crept up to about 5 and I don't know how long it is, but it is a goodly period. That is from the drawing board to the production and rolling them off, and not a modification.

Q. If it were a much bigger plane than anything that had been had before it might be presumably longer?

A. It might be longer if it is from the original concept of production. If it is a modification, it is different.

Q. And one couldn't tell what you needed until you saw the size and shape of the thing you had to carry?

A. Yes, sir.

Mr. SILVERMAN. Thank you.

Mr. ROBB. Thank you, General.

Mr. GRAY. Thank you very much, General Wilson.

(Witness excused.)

Mr. GRAY. We will recess until 2 o'clock.

(Thereupon at 12:05 p. m., a recess was taken until 2 p. m., the same day.)

AFTERNOON SESSION

Mr. GRAY. Dr. Pitzer, do you wish to testify under oath? You are not required to do so.

Dr. PITZER. I would be very happy to do so if that is customary.

Mr. GRAY. All the other witnesses have.

Will you raise your right hand and give me your full name?

Dr. PITZER. Kenneth Sanborn Pitzer.

Mr. GRAY. Kenneth Sanborn Pitzer, do you swear that the testimony you are to give the board will be the truth, the whole truth, and nothing but the truth, so help you God?

Dr. PITZER. I do.

Whereupon Kenneth Sanborn Pitzer was called as a witness and, having been first duly sworn, was examined and testified as follows:

Mr. GRAY. Will you be seated, please.

It is my duty to remind you of the existence of the so-called perjury statutes. May we assume that you are familiar with them?

I should also like to request, Dr. Pitzer, if in the course of your testimony it becomes necessary for you to refer to or to disclose restricted data, you will notify me in advance, so that we may take the necessary steps in the interests of security.

Finally, I should like to say to you that we consider this proceeding a confidential matter between the Atomic Energy Commission, its officials, and witnesses on the one hand, and Dr. Oppenheimer and his representatives on the other. The Commission is making no releases to the press, and we express the hope that witnesses will take the same view.

The WITNESS. Surely.

Mr. GRAY. Mr. Robb, would you proceed?

DIRECT EXAMINATION

By Mr. ROBB:

Q. Doctor, would you tell us what your present post or position is?

A. My present post is professor of chemistry and dean of the college of chemistry, University of California, at Berkeley.

Q. Would you tell us something of your academic training and background, please, sir?

A. My undergraduate training was at the California Institute of Technology, with a bachelor's degree and a Ph. D. at the University of California in Berkeley.

Q. In what?

A. Physics and chemistry; officially chemistry. My general work has been what is sometimes described as a borderline area between physics and chemistry for the most part, although my professional affiliation has been with the Chemical Society primarily.

I am a member, indeed, a fellow, of the American Institute of Physics, as well as affiliated with the Chemical Society.

Q. Would you say when you took your Ph. D.?

A. 1937.

Q. Do you know Dr. Oppenheimer?

A. Certainly.

Q. How long have you known him, sir?

A. I at least knew of him when I was at Cal Tech in the period 1931 to 1935. More personal acquaintanceship developed gradually during the period from 1935 on at Berkeley and in the later years I was, of course, a professional colleague, and I was a member of the staff in chemistry and in physics.

Q. Have you ever been employed by the Atomic Energy Commission?

A. Yes. I was director of the Division of Research of the Atomic Energy Commission from approximately the beginning of 1949 to the middle of 1951.

Q. You left your academic duties and came on to take that position; is that right?

A. Yes, I was asked to do this. The only basis which seemed reasonable and agreeable to me was on a leave of absence basis, because I wished to maintain as a primary career actual direct scientific work and teaching at the university.

The Commission originally asked me to come for 2 years and leave was arranged on that basis. As a later step it was extended for another 6 months.

Q. When your leave was up, you went back to California?

A. When my leave was up I went back to California. The only difference was that they asked me to take over the deanship. At that time I had been just professor of chemistry previously.

Q. What connection have you now if any with the atomic energy program?

A. My principal connection now is as consultant and affiliate of the radiation laboratory at the University of California, including the program at Livermore, as well as the campus.

Q. Is the Livermore side Dr. Teller's laboratory?

A. It is commonly known as that. I have taken special pains to be sure that the chemistry and chemical engineering program at the Livermore laboratory was adequately staffed and in a healthy state, including the loaning of members of our departmental staff to that program.

Q. I should have asked you in sequence, but I will ask you now, what were your duties as director of research of the Atomic Energy Commission?

A. I am glad you came back to that. My line duties, as it were, concerned responsibility for basic or fundamental research in the physical sciences, including mathematics, chemistry, physics, metallurgy. In what might be described as a staff capacity, I was, shall we say, scientific adviser to other division directors, such as production, military applications, and in general wherever scientific—let me say advice in the physical sciences was useful to the Commission.

Q. And you undertook those duties, I believe you said, in 1950?

A. No, January 1949.

Q. I beg your pardon. Doctor, coming to September 1949, will you state whether or not you had any knowledge of any questions arising or interest in a so-called thermonuclear weapon about that time?

A. Yes, I think it was about that time that my colleagues from Berkeley, Latimer, Lawrence, and Alvarez, came in in connection with some other meeting, and drew my attention particularly to the importance of a more vigorous program in this area.

Q. When you say came in, you mean came to Washington?

A. Yes. That is, they had come to Washington, two of them being members of another panel in some other field, and arriving the day before the meeting, came in to see me and talked about the potentialities in this area.

Q. And you said their thoughts were what about it?

A. Their thoughts were that this represented an important area in which the defense of the United States could be improved by a vigorous program of research and development leading to what has now become commonly termed the hydrogen bomb.

Q. Was that before or after the Russian explosion?

A. It was after the Russian explosion.

Q. Did you thereafter have occasion to see Dr. Oppenheimer?

A. The event that I recall was on a weekend, some time in October—the exact date could be developed if desired, but I do not remember it now—in which I had been up in that area, particularly giving an address to the Chemical Society meeting at Reading, Pa., and I dropped by and visited with Dr. Oppenheimer.

Q. Where?

A. At his home in Princeton, or his office, too, and we discussed this subject, and also the subject of the Atomic Energy Commission fellowship program which was having certain difficulties at that time. I would not say that either one or the other was necessarily the principal reason for the visit.

Q. What was said by Dr. Oppenheimer about the thermonuclear?

A. I was very much surprised to find that he seemed not in favor of a vigorous program in this area.

Q. Do you recall whether or not he gave a reason for that feeling?

A. I am a little vague in my memory as to the reasons and the details of the discussion then. As nearly as I can recall the reasons were substantially the same as are stated in the General Advisory Committee report of October 30, wasn't it?

Q. 29th, I believe it was.

A. And in particular in the appendix or substatement that was signed by Dr. Oppenheimer with others.

Q. Was this occasion on which you saw Dr. Oppenheimer before or after that meeting of the GAC?

A. This was before the GAC meeting. I am quite positive of that.

Q. Do you recall whether or not any mention was made by Dr. Oppenheimer of the views of any other scientists?

A. I am quite sure there was mention at that time of discussion or communication between Dr. Oppenheimer and Dr. Conant, and an indication that Dr. Conant was taking a view similar to that being expressed by Dr. Oppenheimer.

Q. Before we go further in point of time, were you familiar at that time in the fall of 1949 with the work which was going on, prior to the Russian explosion, at Los Alamos in respect to the thermonuclear?

A. I would not say I had a detailed acquaintanceship with that. I knew there was a small study program of some sort and that Dr. Teller was the figure that was regarded as the principal expert in the field. As I recall, he spent a portion

of the time from year to year in Los Alamos. I don't recall the details. I did visit the Los Alamos laboratory in 1949 and reviewed its program in some detail, at least in the areas of which I had particular cognizance or competence, and it was apparent that there was no extensive program in the thermonuclear field.

Q. Would you say that the work that was going on was significant or otherwise in point of magnitude and intensity of effort?

A. It was certainly not what you would call a vigorous program. It was a sort of very subsidiary exploration of a few people—I don't know just how many.

Q. You saw, did you, the report of the GAC of the October 29-30 meeting?

A. Yes. I have forgotten just how long after it was issued.

Q. Were you here in Washington at the time of that meeting?

A. Yes.

Q. Will you tell us whether or not you had prepared any material or any presentation to make to the committee in respect of the thermonuclear problem?

A. No; I don't believe I had any particular presentation prepared at that time. I don't recall any such.

Q. Were your views on the matter solicited by the GAC?

A. I don't recall the detail, but I do not believe that they were, although I am not sure about that point. I do recall having come down at one period and then having had Carroll Wilson, then general manager, apologize and say that the attendance at the forthcoming session was being more highly restricted than he had anticipated. At least this particular session I did not attend. I am not very clear as to the exact detail.

Q. Had your views been solicited or received by the committee on other matters?

A. Oh, indeed.

Q. Prior to that time?

A. Yes.

Q. And were they solicited on other matters subsequent to that time?

A. Yes.

Q. You have stated or have told us about your conversation with Dr. Oppenheimer prior to the GAC meeting and you told us about seeing the report of the GAC meeting. Were you aware subsequent to the GAC meeting of any significant change in Dr. Oppenheimer's views as he had expressed them to you orally, and as they were expressed in the report of the GAC meeting?

A. Over what period of time do you mean?

Q. Any time subsequent to that?

A. I am sure there was some change in detailed view, but I don't recall any marked or major or sudden change.

Q. I am speaking particularly of his attitude with respect to the advisability of going ahead with the thermonuclear program. Were you aware of any significant change in that or any increase of enthusiasm?

A. Certainly not any very marked increase in enthusiasm. There was no major or sudden change that I was aware of.

Q. Doctor, would you say that you are pretty familiar with the nuclear scientists, physicists, and chemists in the country? Are you generally familiar with them?

A. I have reasonably wide acquaintanceship, more of course on the chemical side, but I am acquainted with many nuclear physicists.

Q. Given Dr. Oppenheimer's attitude and feelings as you have described them, what can you tell us about what would be the effect in your opinion upon the scientific world of such attitudes and feelings so far as either increasing or decreasing enthusiasm for the thermonuclear program? That is a long question. I hope it is clear. I am trying not to lead you.

A. I hope you will permit me to make a statement of my general impressions of that time. After the President made the decision and announced it to the papers, I was rather surprised to find that Dr. Oppenheimer did not in some manner or another disqualify himself from a position of, shall we say, technical leadership of the program. I had the feeling that if my advice on a major subject of this sort had been so—if the decision had been so much in reverse from my advice, let us put it that way—that I would not have wanted to be in a position of responsibility with respect to the subsequent pursuit of the program.

As to just what course of action would have been most appropriate, there are various alternatives. I think this would have led to a clearer and more vigorous program had some other arrangement of this sort been had.

Q. Why do you think that, Doctor?

A. It would have been clear that the Commission was by this time thoroughly behind the program and that the fullest support was going to be given to it because special arrangements had been made to be sure that the leadership would be vigorous.

Q. Do you think the fact that Dr. Oppenheimer stayed on entertaining the views which you have told us about discouraged other physicists from going ahead on the program with vigor?

A. I can only say to this that I am afraid it may have. I am not aware of detailed negotiations or influences on particular individuals, but I do know there was difficulty in that early period in obtaining the staff that would have seemed desirable to me and as I believe Dr. Teller felt was desirable at that time, particularly in the theoretical physics area. To have had other advisory leadership that was known to be enthusiastic for the program would, I think, have assisted.

Q. You suggested other advisory leadership. Did you have in mind a specific step that might have been taken either by Dr. Oppenheimer or by the Commission to get such leadership?

A. As I said before, it seemed to me that there were several alternatives there. If the most extreme change had seemed desirable, there was a possibility of full changes of membership in the Statutory Advisory Committee. Other possibilities could have been the appointment of some special panel in this field, and of course a marked and clearcut change in the viewpoints of certain individuals would have assisted the program.

Q. In your opinion did Dr. Oppenheimer do everything he might have to further the program after the President's decision?

A. Again in an inferential sense, I am afraid I must say that he did not.

Q. Would you explain that to us a little bit?

A. As I indicated earlier, it seemed to me that had he enthusiastically urged men in the theoretical physics field to go to Los Alamos or other points as indicated for this program that the difficulties in staffing it would have not arisen. I am sure he had great influence over individuals in that field.

On the other hand, as I say, this is simply an inference, and not something that I know from day to day and man to man.

Q. I understand. What was Dr. Oppenheimer's influence in the physics field during that period to your knowledge?

A. He was unquestionably a most influential individual in dealings with other physicists, particularly theoretical physicists, but also experimental men.

Q. Doctor, did there come a time when Dr. Libby was appointed to the General Advisory Committee?

A. Yes.

Q. Did you have anything to do with that appointment?

A. I don't know how much I had to do with the appointment, but at that time I discussed problems with the then Chairman, Gordon Dean.

Q. Could you give us the approximate date of that?

A. I am trying to think when those appointments were made. This must have been in the late spring or summer of 1950, I would infer.

Q. Would you go ahead? I am sorry I interrupted you.

A. At that time I pointed out to Mr. Dean, as I indeed had pointed out earlier, that there was a considerable body of scientific opinion of the very distinguished and able men that was more enthusiastic with respect to the thermonuclear weapons program and had undoubtedly different views in a number of respects than were represented on the Advisory Committee as of that time. I urged him to appoint to that Committee at least one individual who had been from the beginning enthusiastic for the thermonuclear program and who would assure him of advice based on that point of view.

Q. Whom did you suggest, if anyone?

A. I suggested a number of names, including Dr. W. F. Libby, of the University of Chicago, and eventually Dr. Libby was appointed to the Committee.

Q. Was there a weapons subcommittee of the General Advisory Committee?

A. I believe there was; yes.

Q. Who chose that weapons subcommittee?

A. I have never been a member of the Committee, and I cannot state as a matter of knowledge what the Committee procedure was. I presume that the selection was very likely on nomination by the Chairman and confirmation by the Committee, although it may have been by the full Committee action in some other mechanism.

Q. However, it was done, was Dr. Libby ever appointed to that weapons subcommittee to your knowledge?

A. I don't know whether he was ever appointed to the Committee, but I am substantially certain that he was not appointed to the Committee in the fall of 1950.

Q. There has been quite a bit of testimony here about a meeting held at Princeton, I believe, in the spring of 1951. Are you familiar with that meeting in general, and did you hear about it?

A. Yes, I heard about that meeting.

Q. Was Dr. Libby invited to that meeting as far as you know?

A. As far as I know, he was not.

Q. What can you tell us about the importance or the essentiality to the atomic weapons and the thermonuclear weapons program today of Dr. Oppenheimer, in your opinion?

A. Let me develop this in a number of facets.

Q. That is why I asked the broad question so you can answer it in your own way.

A. I would like to discuss these briefly from three points of view. One is in terms of immediate scientific work. That is the calculations, theoretical derivations and this sort of thing. This by and large is done by younger people, particularly in the field of theoretical physics. I haven't the slightest doubt that Dr. Oppenheimer would be valuable to such work but, by and large, from that tradition and experience in theoretical physics, this sort of thing is done by people in their twenties or thirties.

The second aspect is that of leadership among men in this field. I have no doubt that Dr. Oppenheimer's influence and importance in the sense of leadership among men is of the highest order. He would have a great deal of influence and could be of a great deal of assistance in persuading able people to work at certain places and at certain times and in selecting people for this.

The third phase that I would mention would be that on what might be called policy advice. This is the sort of thing that the Commission and other nontechnical management people need. Personally, I would not rate Dr. Oppenheimer's importance in this field very high for the rather personal reason, I suspect, that I have disagreed with a good many of his important positions and I personally would think that advisers in the policy field of greater wisdom and judgment could be readily obtained.

Q. You say very honestly that you personally disagree. Let me ask you whether or not events have proved that you were right or Dr. Oppenheimer was right.

A. That is a difficult question. I think personally that we were right in going into a vigorous thermonuclear program at the time we did. I would not want to question the possibility of a perfectly sincere and reasonable judgment to the contrary at that time. I want to make it perfectly clear that I am emphasizing here essentially need, or in the extreme, indispensability of the advice than some other feature. Possibly it would be just fair to say that in the policy area I certainly do not regard Dr. Oppenheimer as having any indispensability.

Q. One final question, Doctor. You are not here as a witness, are you, because you wanted to be?

A. Certainly not. Thank you for asking that. I am here only at the very specific and urgent request of the general manager and with a feeling that as one of the senior scientific personnel of the Commission at a critical time that it was only reasonable that I should accede to the general manager's request.

Q. Doctor, I am asking this next question so that the record will be plain and not intending to insulate anything.

Although you are here at the specific request of the general manager, your views which you have expressed are your own independent views, aren't they?

A. Indeed. I am expressing only precisely my own views and I think anyone that knows me would be pretty certain that I would not express anybody else's views no matter how they were put.

Q. In other words, the general manager's request brought you physically here but did not give you the ideas which you expressed.

A. That is correct.

Mr. ROBB. That is all I care to ask, Mr. Chairman.

Mr. GRAY. Mr. Silverman.

Mr. SILVERMAN. Yes, sir.

CROSS-EXAMINATION

By Mr. SILVERMAN:

A. What I believe I said was that I was surprised that he was opposing a vigorous program and that as nearly as I can recall for it were substantially those in this majority appendix.

Q. Do you recall specifically that he then told you the reasons and what they were? I am not trying to trap you into anything. Or do you think it possible that you are now reading back the reasons stated in the GAC report, and they did not surprise you very much when you heard them as Dr. Oppenheimer's views?

A. I am sure we did discuss the problem, not at great length, but at appreciable length, and that the reasons must have been offered. I frankly can't be sure exactly which argument came into the picture at which time.

Q. You were asked about the extent of the thermonuclear program work that was being done in that field up to September of 1949. I think you said that you didn't think there was a very extensive program, or something of that kind?

A. Yes.

Q. If I am wrong, don't hesitate to correct me. It is all right. Would you say that Dr. Bradbury, who was the director of the laboratory at Los Alamos, was perhaps in a better position to give a statement of the extent of the thermonuclear work that was being done than you were?

A. Oh, indeed. Dr. Bradbury had more detailed information concerning the size of the program, as did Dr. Teller and others.

Q. Your position was director of research. Am I correct that weapons development or research was not a part of your responsibility?

A. The situation with particular respect to weapons was as follows. The line authority for the Los Alamos Laboratory and the remainder of the weapons development, as well as production program, was in the Division of Military Applications under the directorship then of General McCormack. My function in that area was strictly a staff function to be of whatever assistance and advice I could be since General McCormack was not himself a scientist.

Q. If and when you were asked for scientific advice, you would give it, and find out what you could, and so on?

A. Yes. In fact, I would go further. I am not particularly bashful. I would frequently make suggestions on my initiative, and I was invited to make suggestions on my initiative.

Q. I am not suggesting that you were not, nor that your suggestions were not entirely welcome. I am sure they were. I am just trying to establish the lines of responsibility.

A. That is correct.

Q. And that, in fact, the development of weapons would be more a matter that perhaps General McCormack would know more about, and perhaps Dr. Bradbury would.

A. In terms of the details or in General McCormack's case, the administrative side of the program, that statement would be appropriate.

Q. And in terms of what was actually done in the development of the weapons.

A. I wouldn't argue that.

Q. I am not trying to argue with you either. I think you said that you did not think that your views were solicited by the General Advisory Committee at the time of the October 1949 report. Do you recall whether there was a subsequent time, fairly shortly after the General Advisory Committee report, when they did solicit your views?

A. As I recall, there was a subsequent meeting, possibly in early December, in which this subject was reviewed again. If I remember correctly, General McCormack and I were both invited to that meeting and invited to essentially speak our peace, since we were by that time believed to be in substantial disagreement with the Committee. As I recall, General McCormack testified at greater length and I supported the view contrary to the Committee's report briefly.

Q. You said testified; spoke, I take it you mean. It was a discussion.

A. Yes.

Q. I think you said you were rather surprised that Dr. Oppenheimer did not disqualify himself from a position of technical leadership of a program with which he apparently disagreed. Do you know whether Dr. Oppenheimer did in fact offer to resign from the chairmanship of the General Advisory Committee at that time?

Q. You have not heard that he offered to the Chairman, Mr. Dean, to resign?
A. I don't believe I heard that; no.

Q. And you don't know what Mr. Dean's reaction was. You just never heard of it?

A. I never heard about it.

Q. I think there has been testimony here about it, so I think the record is clear enough on it.

A. At least, if I heard of it, I do not recall at this time.

Q. I take it you would be less critical of Dr. Oppenheimer's attitude if that were the fact, if he offered to resign and was urged to remain?

A. Certainly so. I think, however, that his position today would be better if he had insisted on at least some degree of disqualification in this field at that time.

Q. I wish you would elaborate on that.

A. Let me put it this way. I am extremely sorry to see this issue concerning advice which on hindsight proved not too good brought up in connection with a security clearance procedure. I feel very strongly that scientists should feel free to advise the Government and not be held to account if their advice proves not the best afterward. This should have no relevance to security clearance procedure. If Dr. Oppenheimer had seen fit to insist upon stepping out of the position of advising on the hydrogen program, this could not be introduced into this argument at this time. I am very sorry to see that it does have to come up at this time.

Q. I need hardly say that I entirely agree with you.

I think you said that you thought that Dr. Oppenheimer's attitude may have discouraged people from working on the thermonuclear program, and you were very frank in saying you didn't have details of that, and so on. I suppose your greatest familiarity would be with the situation at Berkeley, would it not?

A. I certainly had some degree of familiarity with the situation at Berkeley at the time I was in Washington, both because the radiation laboratory was more immediately under the Research Division, and because all of my personal contacts with the Berkeley staff.

On the other hand, I would assure you that I took a very definite interest in this thermonuclear program and visited Los Alamos on occasion, and visited with Professor Teller and others when he was in Washington in order to see how it was going, and in order to offer my assistance at any time.

Q. I think you were asked whether you thought Dr. Oppenheimer did everything he might have done to further the President's thermonuclear development program after the President's decision, and I think you said you thought he might not have. Everything that a man might have done is a relative thing.

Mr. ROBB. Mr. Chairman, I hate to interrupt but it seems to me that the witness ought to do the testifying and not Mr. Silverman.

Mr. SILVERMAN. That is an introduction to the question.

Mr. GRAY. I think it is true that you have been expressing your views quite frequently, Mr. Silverman, in this cross-examination, and I have not stopped you, again in the interest of not being too rigid in our procedures. But I think it well for me to make a request at this time that you confine your introductory statements to the necessities of the question, because the record should primarily reflect the views of witnesses, rather than counsel.

Mr. SILVERMAN. I have tried to do so, sir, and I will try to be more careful of that.

Mr. GRAY. Thank you.

By Mr. SILVERMAN:

Q. Would you say that doing everything that one might have done is a relative matter?

A. It is a relative matter, and in my earlier answer to the question I was not trying to slice close to the line. I felt that the events of that period were sufficiently wide of a narrow borderline to justify the critical statement.

Q. In one sense, and I am not criticizing you, sir, you did not do everything you might have to further the program.

A. No. There are things on hindsight one can always figure out one could have done more. I suppose one could have done many things differently, but I certainly carried it as a high priority among my duties, particularly considering that it was not a line, but rather a staff problem, and I regarded the program since as something that demanded my attention whenever anything substantial could be contributed to it.

Q. You didn't consider that it was necessary for you not to return to the university, for instance?

A. No. But I delayed the return for 6 months very substantially on that account.

Q. Believe me, I am not criticizing you, sir. I think you are entirely within your rights. You have taken the position as a consultant which I take it is a part time position.

A. Yes; I think since you are pursuing this matter, I would like to say a little further that I am not myself a nuclear physicist. The chief contributions which I can make to this program are to be sure that the chemical engineering components that need to go into the various units are made to the exact specifications that are required, and so on. My position is the administrative position in chemistry at the University of California at Berkeley, and I have thought my best contribution would be to see that the proper people were working on the proper jobs at the proper time, rather than I should necessarily go and do them with my own hands.

Q. Don't you think, sir, that the decision as to how much of one's own efforts and time one puts into some program is a matter for personal judgment of a man?

A. Yes; I was considering these judgments earlier in very appreciable degree with respect to the adequacy of staffing of a given program and the ability of a particular person to take steps to assure that the program was adequately staffed. In my own position the sort of thing I could do was to essentially say, "Look, Mr. So-and-so, we will get along without you in the department, half time or full time, next semester. This is an extremely urgent job." Of someone not associated with the university initially, but in my general field I can advise him of the importance of the program and urge him strongly to serve if offered an appropriate position. It is in this frame of reference that my earlier comments were made.

Q. Don't you think that service on the General Advisory Committee is itself quite an important contribution?

A. It is, indeed, an important position.

Q. Returning to your statement that you thought that you thought Dr. Oppenheimer's attitude may have discouraged people from working on the thermonuclear program, there, of course, have been other factors in the difficulty of getting staff, were there not?

A. There are always other factors. The question is the relative importance of this task as compared to others, and the sense of urgency which is imparted to a man who is considering either going to this program or not going to the program.

Q. I think you said that you saw no marked increase in Dr. Oppenheimer's enthusiasm as to going ahead with the hydrogen bomb. Was that during the period you were here?

A. Yes; that was during the period I was in Washington. I have seen Dr. Oppenheimer only most infrequently since I left Washington.

Q. When did you leave Washington?

A. This was the summer of 1951.

Q. Are you in a position to say as to whether his enthusiasm increased with the later improved outlooks for the feasibility of the hydrogen bomb?

A. I am not in a position to say anything about that.

Q. You referred to the appointment of Dr. Libby to the General Advisory Committee. I think you said that Dr. Libby was one of a number of names that you had suggested. Do you know that Dr. Libby was on a list that Dr. Oppenheimer submitted to Chairman Dean for membership on the General Advisory Committee?

A. I have no knowledge of that.

Q. Before you came to your position with the Atomic Energy Commission as director of research, did Dr. Oppenheimer have a conversation with you in which he urged you or asked you whether you would be willing to spend some time in Government work in Washington?

A. It is very likely that this was the case. I am not sure.

Q. In your testimony earlier about a meeting at Princeton—there have been so many meetings at Princeton—I am talking about the weekend you spent at Princeton when you spoke to Dr. Oppenheimer about the hydrogen-bomb program in the fall of 1949, and also the fellowship program.

Mr. ROBB. I don't think he spent a weekend there.

Mr. SILVERMAN. As long as we have the time. As to the length of time, it doesn't matter. I am making no point about it being a weekend at all.

By Mr. SILVERMAN:

Q. What was the fuss about the fellowship program?

A. This is a long story. The essence of it was that the Congress of the United States introduced a rider in the Appropriation Act which required investigation and a decision as to loyalty for all fellows under the program in the future.

Q. What was your view on that?

A. I was very sorry to see such a requirement introduced into the program.

Q. Was Dr. Oppenheimer's view in accord with yours on that?

A. In that general way, yes. I was sorry to see it introduced. I was equally sorry and disturbed by the events and situations which had come to the attention of the Congress and which led them to introduce it.

Q. Were you against this requirement?

A. As I say, I was opposed to the introduction of a requirement for full investigation. I was hoping that the situation could be handled by some loyalty oath or some other procedure which would not require a full field investigation, but which would still give a case of reasonably substantial certainty of loyalty to the United States.

I might add that this was the course taken with respect to the National Science Foundation later.

Q. Were you critical of the work of the Reactor Safeguard Committee?

A. Yes; I have been critical of that.

Q. Do you recall who the chairman of that committee was during the period when you were critical of it?

A. Surely. My good friend Edward Teller. I have argued with him in a friendly fashion on many times.

Q. And you don't for a moment question his good faith and what he did there?

A. Not at all.

Mr. SILVERMAN. Thank you.

Mr. GRAY. Dr. Pitzer, are you familiar with the exchange of letters between General Nichols and Dr. Oppenheimer? Have you read them?

The WITNESS. I have read that double-page spread in the New York Times, which contains I believe what you are referring to.

Mr. GRAY. I suppose that was accurate. I never checked it. I would like to read you a part of General Nichols' letter. This is in a paragraph which in its entirety related to the hydrogen bomb, starting about the middle of the paragraph:

"It was further reported that even after it was determined as a matter of national policy to proceed with development of a hydrogen bomb, you continued to oppose the project and declined to cooperate fully in the project."

That is a sentence in that paragraph. In order to get a clearer view of your opinion in my own mind, may I assume it is an accurate reflection of your testimony that this suggestion is not borne out by your understanding of events, that is, you have not testified that Dr. Oppenheimer continued to oppose the project?

The WITNESS. I am forced to say that my impressions of that period were more consistent with the hypothesis that he was still personally opposing the project than with the hypothesis that he had made a major change in his views and was now strongly supporting the project.

Mr. GRAY. I suppose there is a difference of finding oneself in personal opposition and finding oneself opposing. I must say I had not thought of a distinction of this sort in this language until this moment. But I would like to know what you feel. Let us assume that this means actively opposed as distinguished from holding to personal views in opposition. Is that a clear distinction in your mind?

The WITNESS. I must admit that I am likewise trying to make a finer distinction than I thought about commonly before. What I mean to say is essentially this: I have no personal knowledge of Dr. Oppenheimer going to Mr. X and saying don't work at Los Alamos, or of his making a technical recommendation obviously and distinctly contrary to the demonstrable good of the program.

On the other hand, I have great difficulty believing that the program would have had certain difficulties that it did have at that time if he had enthusiastically urged individuals to participate in the program, because as I said

Mr. GRAY. It is clear that you have said that you feel that Dr. Oppenheimer failed to encourage people or did not encourage people—I don't mean to use a word that is loaded—did not encourage people to work on the project. You have said you didn't know of any instances in which he actively sought to discourage people from working on the project.

The WITNESS. At least not at this time. Part of my impressions may have carried over from instances known in greater detail at a date nearer the time of events.

Mr. GRAY. You could not name anyone that you thought had failed to work on the project because of Dr. Oppenheimer's persuasive powers?

The WITNESS. I know, for example, there was much discussion about Hans Bethe at that time. It is entirely plausible to me that had Dr. Oppenheimer encouraged Dr. Bethe he might have very likely entered the program actively at that time. This is supposition. I was certainly not present at the conversations between Dr. Bethe and Dr. Oppenheimer. I mention Dr. Bethe in part by way of example.

Mr. GRAY. Would you return for a moment to the second GAC meeting in late 1949—I have forgotten when that was. December, I think.

The WITNESS. I believe so.

Mr. GRAY. At which time you and General McCormack were invited to present your views to the General Advisory Committee. I believe you said that General McCormack spoke at some length and you supported his views. What was General McCormack's view and yours at the time? What was expressed to the GAC as well as you recall it?

The WITNESS. My recollection is rather vague of that particular time, and I am somewhat reluctant to try to put words in General McCormack's mouth after this lapse, but the view that I believe I would have been attempting to present at that time was essentially the one, that one could not improve the national defense by remaining in ignorance in an area where there are developments of potentially very great importance to the national defense. I was unable to see how a policy of intentionally not pursuing a vigorous program could possibly be consistent with optimum defense of the country.

Mr. GRAY. You referred to what you supported as a more vigorous program than was in effect at that time. It is clear that the General Advisory Committee recommended in October and again in December against an all-out production effort of the so-called super. That was clearly one of the recommendations, as I understand it.

The WITNESS. Yes.

Mr. GRAY. I would like to put to you a question I have put to other witnesses with very little success, and it may be my ignorance or just my failure to ask a question properly. In your judgment was there something that the GAC could have recommended at this time which was short of an all-out production program but more than was recommended?

The WITNESS. Oh, indeed; obviously, to me.

Mr. GRAY. Was that your position at the time, or were you for the all-out production? You see I am a little confused when you say a more vigorous program.

The WITNESS. Let me put it this way. I was for a very vigorous program, one which would have the highest possible priority, subject to reasonable continuation of other important programs. In other words, I was not in favor of stopping a lot of other important activities, but I was thoroughly convinced that the necessary manpower could be recruited, the necessary facilities provided, for a very vigorous program of the general nature that was being discussed and advocated at that time by Dr. Lawrence and Dr. Teller and others. I believe I said at that time—I am sure I felt—that this business of a crash program was largely what we called a strawman. In other words, it seems to me that the General Advisory Committee was clearly in a position to have recommended a program of intermediate intensity if such had been their judgment.

The recommendations that were actually made, as you gentlemen have them, are almost entirely negative in character. They are in terms of not doing this and not doing that.

Mr. GRAY. The reason I started to smile is I think you answered my question, the question I have been trying to ask, at least you have given me your opinion about it, and you made it clear to me that perhaps there is a valid distinction,

May I turn now to another thing about which you testified very briefly, Dr. Pitzer. You referred to your unhappiness with respects to events that led up to congressional action in attaching the rider to the appropriation bill. What are these events that you have in mind?

The WITNESS. The sequence began with a young man by the name of Friestad.

Mr. GRAY. I didn't mean to bring my university into this hearing.

The WITNESS. I am sorry; the facts are that way.

Mr. GRAY. I honestly did not know this is what you were talking about.

The WITNESS. He was first essentially exposed and discussed as essentially, I believe, an admitted Communist and holding a fellowship. Hearings were held and there was a great deal of discussion in the press, and as it were, one thing went on to another, until, the Senate in due time attached this rider to the bill and the House accepted it.

Mr. GRAY. Prior to this time when the Congress established the requirement which you found yourself unhappy about, did you participate in any kind of discussions with respect to what should be required of these fellows in the way of disclosure of political affiliations as we seem to refer to them in this hearing?

The WITNESS. Yes. There were discussions within the Commission at that time. I have forgotten exactly the details. I certainly participated in such discussions.

Mr. GRAY. Would the GAC have participated in this kind of discussion? You, of course, were not a member of the GAC.

The WITNESS. I don't recall the chronology. This fellowship business happened pretty fast, and I rather doubt if there happened to occur a GAC meeting in that period. I believe I recall that the then Chairman, Mr. Lilienthal, got in contact with Dr. Oppenheimer and possibly other members of the GAC by telephone—they may have to come to Washington specially—and it may have been that a meeting was held, but I don't recall such.

Mr. GRAY. Let us leave the GAC out of it at this point and let me approach it from another angle the thing that I am trying to get clear in my mind.

There were discussions, I assume, in which a suggestion was made that there should be no inquiry put to an Atomic Energy Commission fellow with respect to his political affiliations. This was the view of some people at that time, is that correct?

The WITNESS. I believe such views were held at that time.

Mr. GRAY. My question is this: Was this the view of the Commission at that time, or could the Commission be said to have had a view?

The WITNESS. I don't believe the Commission could be said to have had a view at that time. At least if as a Commission it reached any decision, I am not aware of it now.

Mr. GRAY. I don't think I will pursue that any further, Dr. Pitzer. Dr. Evans?

Dr. EVANS. Dr. Pitzer, you said you were not a nuclear physicist, is that right?

The WITNESS. That is correct.

Dr. EVANS. Would you call yourself a physical chemist or a physicist?

The WITNESS. I would call myself a physical chemist; yes, sir.

Dr. EVANS. I want to ask you if you met a man in recent years, a graduate of Cal. Tech., by the name of Sheehan? It is one of my students that I sent out there. I thought he was particularly brilliant. He got a Ph. D. degree.

The WITNESS. I have met, I believe, casually, a young Sheehan, but I don't know enough about his background to complete the identification with certainty.

Dr. EVANS. Have you met any Communists in the course of your career, that you knew were Communists?

The WITNESS. It may well have happened. They didn't have Communist labels pinned on them at the time.

Dr. EVANS. They don't often have, do they?

The WITNESS. No, they don't often have.

Dr. EVANS. Did you know David Hawkins?

The WITNESS. The name is familiar to me. If I ever met him, I do not recall it.

Dr. EVANS. Did you know Bernie Peters?

The WITNESS. Again if I ever met him personally, I do not recall it, although I recall very vividly the case of getting him a passport to India that took a definite Commission action, so that his name is definitely familiar to me.

Dr. EVANS. Did you know Fuchs?

The WITNESS. I don't believe I ever knew Fuchs, or ever met him. I knew of him from the scientific literature.

Dr. EVANS. I have no further questions.

REDIRECT EXAMINATION

By Mr. ROBB:

Q. Doctor, is it or is it not true in your opinion that in the case of a scientist as influential as Dr. Oppenheimer a failure to lend enthusiasm and vigorous support to a program might constitute hindrance to the program or opposition to the program?

A. There is a certain element of semantics in that question, but I would say yes.

Mr. ROBB. Thank you.

Re-cross-examination by Mr. SILVERMAN:

Q. I think I have just one more question. You testified about the difficulty of obtaining staff on the thermonuclear program. I think you indicated that Dr. Oppenheimer was not helpful. Is Dr. Karplus at Cal. Tech.?

A. I believe so.

Q. Do you know whether he is a man that Dr. Oppenheimer recommended to go there?

A. I don't know the details.

Q. He is or has been from time to time a temporary member of the Institute for Advanced Study, has he not?

A. As I say, I am not familiar with the details in that case. The staffing at Livermore in the physics area has been in the very able hands of Ernest Lawrence and other physicists, including Edward Teller. I simply have not felt it necessary or needful to pay attention to details in that area.

Mr. SILVERMAN. That is all.

Mr. ROBB. That is all.

Mr. GRAY. Thank you very much, Dr. Pitzer.

(Witness excused.)

Mr. GRAY. We will recess now, gentlemen, for a few minutes.

Mr. GRAY. Dr. Teller, do you wish to testify under oath?

Dr. TELLER. I do.

Mr. GRAY. Would you raise your right hand and give me your full name?

Dr. TELLER. Edward Teller.

Mr. GRAY. Edward Teller, do you swear that the testimony you are to give the board shall be the truth, the whole truth, and nothing but the truth, so help you God?

Dr. TELLER. I do.

Whereupon, Edward Teller was called as a witness, and having been first duly sworn, was examined and testified as follows:

Mr. GRAY. Will you sit down.

Dr. Teller, it is my duty to remind you of the existence of the so-called perjury statutes with respect to testifying in a Government proceeding and testifying under oath. May I assume that you are generally familiar with those statutes?

The WITNESS. I am.

Mr. GRAY. May I ask, sir, that if in the course of your testimony it becomes necessary for you to refer to or to disclose restricted data, you let me know in advance, so that we may take appropriate and necessary steps in the interests of security.

Finally, may I say to you that we consider this proceeding a confidential matter between the Atomic Energy Commission, its officials and witnesses on the one hand, and Dr. Oppenheimer and his representatives on the other. The Commission is not effecting news releases with respect to these proceedings, and we express the hope that witnesses will take the same view.

DIRECT EXAMINATION

By Mr. ROBB:

Q. Dr. Teller, may I ask you, sir, at the outset, are you appearing as a witness here today because you want to be here?

A. I appear because I have been asked to and because I consider it my duty upon request to say what I think in the matter. I would have preferred not to appear.

Q. I believe, sir, that you stated to me some time ago that anything you had to say, you wished to say in the presence of Dr. Oppenheimer?

A. That is correct.

Q. May I ask you, sir, to tell the board briefly of your academic background and training.

A. I started to study in Budapest where I was born, at the Institute of Technology there, chemical engineering for a very short time. I continued in Ger-