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MINUTES

60th MEETING OF

A. E. C. ADVISORY COMMITTEE ON BIOLOGY AND MEDICINE

PLACE: Berkeley, Livermore and San Francisco, California

DATE: January 16 through 19, 1957

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The sixtieth meeting of the Advisory Committee on Biology and Medicine was held at Berkeley, Livermore and San Francisco, California on January 16 through 19, 1957.

The meeting consisted of scientific presentations by the staff of the Donner and Crocker Laboratories of the University of California at Berkeley, the Livermore Laboratory at Livermore and the Radiological Laboratory of the University of California Medical Center in San Francisco, California. The Committee met in two sessions: one, devoted to the subject of the strontium-90 fallout problem which was held on the evening of January 16 at the Claremont Hotel in Berkeley and the second, held on Saturday, January 19 at the University of California Medical Center. The latter meeting was preceded by the Executive Session.

The special session on strontium 90 was convened at 9:00 p.m. on January 16 with Dr. G. Failla presiding. The following persons were present:

A D V I S O R Y   C O M M I T T E E

Dr. G. Failla, Chairman	Dr. H. Bentley Glass
Dr. Shields Warren	Dr. Simeon T. Cantril
Mr. Hanson Blatz, Scientific Secretary	

S T A F F ,   D I V I S I O N   O F   B I O L O G Y   A N D   M E D I C I N E

Dr. Charles H. Dunham	Dr. John R. Totter
Dr. Forrest Western	Mrs. Frances Montgomery, Secretary
Dr. Harry D. Bruner	

U N I V E R S I T Y   O F   C A L I F O R N I A

Dr. Curt Stern (Former ACBM Member)

SESSION ON THE STRONTIUM-90 FALLOUT PROBLEM  
(Continuation of Discussions at Special Meeting)

STATUS OF  
PROBLEM

DR. FAILLA opened the meeting by presenting the problem. A special meeting was held in Washington on December 26, 1956 for the purpose of considering the strontium-90 fallout question, but no decisions were reached. DR. GLASS pointed out two things that happened at the meeting which prevented reaching a decision. They were, the statement by Commissioner Murray that the weapons testing program for the coming year was already decided upon and the comment by Admiral Strauss that there was no great urgency for a statement by the Committee. DR. DUNHAM commented that Admiral Strauss had not been aware of the purpose of the special meeting when he arrived to greet the members and had later expressed the opinion that he did not intend to discourage the Committee from studying the problem and making any recommendations it saw fit. Dr. Failla said that the problem exists in the mind of the public and that some statement should be made by the AEC as to what is the true situation with regard to the strontium-90 hazard.

AVAILABLE  
AND REQUIRED  
DATA

In response to a question by Dr. Dunham as to whether the Committee had in fact come to any decision, DR. WARREN stated the need for further information as to the degree of accuracy of the various analyses of strontium in the bone. This stimulated a lengthy discussion of the methods of sampling and the analysis and the Committee was reassured by DR. DUNHAM and DR. WESTERN that there was very little likelihood that any significant errors involved in the bone analyses which are currently being done by five or six different laboratories, including one in England. The desirability of offering spiked samples to the various laboratories for intercomparison was discussed and DR. WESTERN agreed to follow this up. He indicated that recent statements by Dr. Comar would tend to alter Merrill Eisenbud's estimates of ultimate maximum uptake by a factor of 2 to 5 in a downward direction.

CLARIFICATION  
OF PROBLEM

DR. WESTERN pointed out that these exact numbers are relatively unimportant, but that the entire problem should be redefined in order to clarify understanding in three general classes of the public; the general non-scientific public, the general scientific public and the scientific public informed with regard to radiation. Such a redefinition of the problem would consider the pertinent criteria; such as, genetic effect, bone cancer, leukemia and lifespan. The questions should be considered as to what is safe and unsafe or what is acceptable or unacceptable and also what would be the alternative to a normally unacceptable level.

METHOD OF  
PRESENTING  
STATEMENT  
TO PUBLIC

DR. STERN, in response to a request for his opinion by Dr. Failla, stated that it was of great importance to get the general scientific groups to avoid contradictory statements by competent scientists. Dr. Failla pointed out that the more serious matter was the apparent contradictory statements by those associated with the AEC. DR. GLASS raised the question of establishing a policy regarding public statements on this or similar subjects by responsible scientists in official or quasi-official groups; such as, the AEC, the NAS, the ACBM, etc.. DR. STERN expressed a belief that if the ACBM were to prepare a statement and receive the endorsement of the GAC, it would have a great influence on the scientific community. DR. FAILLA stated that the GAC had asked the ACBM for a statement but there had been many delays in attempting to arrive at a decision. DR. CANTRIL stated that perhaps there had already been too great a delay but that the need for a statement of an educational rather than a propoganda type exists.

SUBSIDIARY  
PROBLEMS

DR. FAILLA raised the question of the current state of knowledge regarding the relative uptake of strontium and calcium. DR. DUNHAM and DR. WESTERN reported that considerable work was being done in this area and that important additional work is being planned. Indications are that there is preferential discrimination of from 2:1 to 5:1 in favor of calcium.

DR. FAILLA and DR. GLASS both expressed concern <sup>about</sup> for the use of absolute numbers in stating the part of the population affected by radiation. DR. FAILLA expressed belief that there are no thresholds of various radiation effects; such as, bone tumor, leukemia or life shortening, but this cannot be proved. The question then appears to be what percentage of the population can we tolerate to be damaged. The Geneticists have stated that 10 r in thirty years is acceptable. If the gonadal dose of radiation required to double the spontaneous mutation rate is 50 r up to age 30, this means that an increase of 20% in the mutation rate is acceptable. On this basis it is likely that a 20% increase in bone tumor incidence would also be acceptable, considering that the spontaneous incidence of bone tumors is small. He also pointed out that we should not ignore the fact that we are distributing strontium on countries other than our own.

PROPOSED  
ACTION

At the request of Dr. Failla, DR. WESTERN proposed the following action. The ACBM should suggest to the AEC that steps be taken to inform the public with regard to the strontium-90 hazard from weapons testing. Such a program would probably take a year or two and might result in a number of publications directed at the non-technical public, the scientific public and the segment of the scientific public informed on radiation, such as radiologists. DR. CANTRIL suggested an AEC report (not a book) which would state what is known to date, what

PROPOSED  
ACTION  
(continued)

could be done to learn more, but that no conclusions (in the form of numbers) should be drawn. It was DR. GLASS' opinion that the ACBM should report only to the AEC with no recommendation regarding a public statement and that the statement should perhaps be made by groups, such as the NAS. DR. WARREN suggested a further look at tangible things, such as the results of experimentation with mice and dogs and also a careful review of what is known about man, for example, his tolerance to radium. He expressed the opinion that predictions were too far from the tangible. A lengthy discussion followed regarding the effects of radium on humans, both from the carcinogenic as well as the genetic point of view. The contents of the latest semi-annual report as well as further progress by NAS Committees were discussed. DR. CANTRIL suggested keeping in touch with NAS Committee progress before writing any report and that a correlation in point of view and in number would be desirable before making any quotations to the press.

DR. DUNHAM asked the Committee if any members felt that the situation was now dangerous. DR. GLASS responded that it may be but that there were not enough facts at hand to reach a decision. A discussion as to what should be considered dangerous followed with suggested estimates of allowable percentage increases of bone tumors and lung cancer. DR. CANTRIL expressed the opinion that the immediate concern of the ACBM is whether a), investigation is being carried out adequately and b), that uninterpreted data be presented to the scientific community. He believed that the NAS should interpret the data and that the NAS should be asked if the investigation is adequate. A discussion followed between DR. GLASS and DR. WARREN about the desirability of challenging public statements of colleagues and the dangers of over-emphasis in statements by recognized scientists.

The meeting was adjourned at approximately 11:30 p.m..

EXECUTIVE SESSION - JANUARY 19, 1957  
(11:40 a.m. to 12:30 p.m.)

The session was called to order at 11:40 a.m. with all the ACBM members (except Dr. Bugher and Dr. Burnett) present in addition to Dr. Dunham, Mrs. Montgomery (part time) and Mr. Blatz.

Dr. Failla read Mrs. Montgomery's letter of retirement, effective February 1, 1957. DR. WARREN proposed a motion as follows:

MRS. MONTGOMERY'S  
RETIREMENT

"The Advisory Committee wishes to express its appreciation to Mrs. Frances R. Montgomery upon the fulfillment of many years of loyal and affectionate service as Secretary to the Committee. The members are certain that they speak also for all the past members."

DR. CANTRIL seconded the motion and it was carried unanimously.

DR. FRED'S  
RESIGNATION

DR. DUNHAM announced Dr. Fred's resignation from the ACBM and stated the need for selecting nominees to present for appointment. He also pointed out that Dr. Failla would be retiring from the Committee soon and that a replacement for him would be needed as well as the selection of a new Chairman. A list of possible candidates for Dr. Fred's replacement had been prepared by Dr. Starkman and there was a considerable discussion of the type of scientist needed. DR. FAILLA indicated a preference for a biochemist. DR. WARREN suggested a person with biochemical and agricultural interests, if possible and DR. GLASS suggested a micro-biologist. DR. FAILLA suggested that particular emphasis on agriculture did not appear to be necessary, but DR. DUNHAM pointed out the great number of agricultural contractual matters coming up. DR. WARREN pointed out that the problem of fallout had many agricultural implications and that there was considerable congressional interest in agriculture.

DR. WARREN suggested that arrangements be made for the ACBM to call on DR. FAILLA as a consultant after the expiration of his term of office and wait a year or so before selecting a radiation-physicist Committee member. It was finally decided to nominate the following candidates for submission to the General Manager: Dr. Paul F. Sharp; Dr. J. C. Horsfall and Dr. J. J. Christensen, with Dr. Sharp being the first choice.

ABCC

DR. DUNHAM reported that a letter was being prepared in which the principal deficiencies of the ABCC were enumerated; housing, the ICA hospital wing, a permanent NAS officer and field scientific director. Dr. Keith Cannan will continue as executive officer and be in Japan for about three months. Dr. Holmes is to return soon. The recent recruitment program has been good and it is expected that a pathologist will be obtained soon. DR. GLASS pointed out the desirability of continuing the genetics program with the AEC having an adviser for the ABCC. He believed that a new look was needed, and suggested after considerable deliberation, Dr. James F. Crow of Wisconsin. He proposed that Dr. Crow go to Japan for some months and indicated that Dr. Crow would be willing to do so. It was believed that a quick look at the program to date would suggest what to do next, but that the major program should be left to the Japanese. DR. DUNHAM suggested holding up any policy action on the matter until Dr. Bugher and Dr. Burnett were present and suggested placing the item on the agenda for the next meeting.

DR. FAILLA reported that there have been many complaints about isotope services to foreign countries and proposed including some mention of the fact in the next letter to the Chairman.

WEAPONS  
TEST  
POLICY

DR. FAILLA also pointed out that the old Weapons Test Feasibility Committee was no longer active. The military and the AEC decide about the tests. Perhaps it would be advisable to suggest that President Eisenhower appoint a committee to advise about these tests. DR. GLASS expressed the opinion that this was somewhat similar to policy matters on the location of nuclear reactors. It was generally agreed that no proposal should be made until an informal approach had been made by Dr. Dunham.

MARCH MEETING

It was agreed that the next meeting was to be held in Washington on March 8 and 9 or on March 15 and 16, 1957, depending on other commitments of the Committee. It was generally agreed that the May meeting would probably be held in Rochester.

DR. FAILLA suggested that Dr. Western's writeup of the material on the strontium-90 fallout problem be used as a basis for preparing an ACBM report to the Commission.

The Executive Meeting was adjourned for lunch at about 12:30 p.m..

BIOLOGY AND MEDICINE PROGRAM SESSION - JANUARY 19, 1957  
(2:00 p.m. to 4:30 p.m.)

This session convened at 2:00 p.m. with the following persons present in addition to those present at the Executive Session:

STAFF, DIVISION OF BIOLOGY AND MEDICINE

Dr. Forrest Western  
Dr. Harry D. Bruner  
Dr. John N. Wolfe

Dr. John R. Totter  
Dr. Herbert A. Stanwood

STAFF, RADIOLOGICAL LABORATORY  
UNIVERSITY OF CALIFORNIA MEDICAL CENTER

Dr. Robert S. Stone  
Dr. Henry I. Kohn  
Dr. Gail Adams

STRONTIUM-90  
FALLOUT  
PROBLEM

DR. WESTERN presented an extensive discussion of the various factors which might be used in determining the potential hazard from fallout. He traced the various factors affecting the eventual deposition of strontium 90; including, end stratospheric fallout, radioactive material on plants as well as uptake through the soil, radioactive material in food products and the amount appearing in human bodies. In this discussion he included consideration of Cs-137, Ce-144, rare earths and plutonium although at present strontium 90 appears to be the only material of concern.

INTER-  
AMERICAN  
CONGRESS

DR. TOTTER presented the plans for the symposium to be held at Brookhaven this Spring. It is expected that foreign representatives from Central and South America would attend and approximately one-half of these would be in the field of biology and medicine. The invitation to attend and present talks presented a delicate matter of diplomatic and scientific relations.

NYU-HASL  
PROPOSAL

DR. DUNHAM reviewed the history which lead up to the proposal received from NYU to embrace the NYO Health and Safety Laboratory as a contract operation. After serious considerations of the various advantages and disadvantages of such a change, it was decided that it was not yet time to give up the only laboratory operated directly by the AEC. It is now expected that the Laboratory will move to space on the University campus which the AEC will rent. Various aspects of this decision were discussed; including, the relationship between the Inspection Division and DBM functions, the advantages of a university atmosphere and the budgetary considerations of such a change including relative cost and overhead.

CURRENT DBM  
ACTIVITIES

1958 Budget DR. DUNHAM reported a better position than in 1957, although no construction has been provided for. Important items include; stratospheric monitoring, strontium analysis and oceanographic studies in marine biology. \$1/2 million has been allotted for a civil-effects program in connection with weapons tests. There has been no allowance for major outside expansion, except the BNL medical facility. MR. STANWOOD stated that there had been no allowance for wage increases for contractor personnel, although such increases were being given. A number of 1959 budgetary forecasts were made by MR. STANWOOD.

The twenty-first Semi-Annual Report This includes a substantial section on radiological-safety records prepared by DBM. An attempt has been made to relate the radiological, health and safety needs as they developed since the beginning of the program, to the resulting research program.

Forthcoming Tests This program will include a substantial civil-effects program, a project of aerial monitoring of fallout employing three planes, sampling of soil, etc. and an attempt to estimate the exposure of individuals near the test sites. An attempt will be made to use badges on typical individuals and to supplement this by the use of other measuring devices. The criteria previously approved by the ACRM is 10 r in ten years and 3.9 r in any one year. The present maximum cumulative exposure encountered to date has been 4 r at St. George.

Return of Rongelapese A staff paper establishes the policy of returning these people to their homes. A followup is to be made on internal exposures. No external hazard is expected. Dr. Conard is to continue monthly examinations and Dr. Wolfe is to conduct continual ecological studies. Imported rice and canned milk are to be made available.

CURRENT DBM  
ACTIVITIES  
(continued)

Stratospheric Monitoring Balloon flights are to be made at four locations once a month; two in the United States, one in the Canal Zone and one in Central America. It is hoped that information will be obtained as to the amount and uniformity of the distribution of radioactivity.

At present the British and Americans disagree as to the distribution with respect to altitude. A contract has been entered into with the Midway Laboratories in Chicago to evaluate filters and other methods of sampling. Each balloon flight will cost between \$4,000 and \$5,000 and can collect samples at only one altitude.

Transportation of Devices by Rail (Discussion is omitted for classification reasons.)

At 3:00 p.m. Dr. Failla left and Dr. Warren presided.

DR. DUNHAM reported on current efforts to stabilize the ABCC program. Dr. Keith Cannan is to continue as Executive Officer. The most serious problem is that of housing, in that the Kure facilities near Hiroshima now being used, will no longer be available after two years.

ABCC

The meeting was adjourned at 4:30 p.m.

Respectfully submitted,

  
Hanson Blatz  
Scientific Secretary ACBM