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MINUTES

of the

SEVENTY-EIGHTH MEETING

of the

ADVISORY COMMITTEE FOR BIOLOGY AND MEDICINE

U. S. ATOMIC ENERGY COMMISSION

at

Hanford Operations Office

Richland, Washington

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ERRATA SHEET

MINUTES - 78th MEETING OF ADVISORY COMMITTEE FOR BIOLOGY AND MEDICINE, JANUARY 8-9, 1960

Page 2 - Last line:
Amount should read $54.2 million instead of $5.4 million

Page 7 - Last line of first paragraph:
Change sentence to read " * * * budget from and be under the administrative control of Mr. Johnson's office."

Second line of third paragraph:
Add "AEC" between the words "other" and "scientific"

After first sentence, third paragraph;
Add the sentence: "The biology program should not be subsidiary to research and routine activities associated with manufacturing."

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The 78th meeting of the Advisory Committee for Biology and Medicine, U. S. Atomic Energy Commission, was held on January 8 and 9, 1960 at the Hanford Laboratories, Hanford Atomic Products Operation, General Electric Company, Richland, Washington. The meeting was attended by committee members Drs. H. Bentley Glass, James G. Horsfall, Robert F. Loeb, Leonidas D. Marinelli, Harland G. Wood, and John C. Bugher, the Vice Chairman, who presided. Dr. Charles L. Dunham, Director, Division of Biology and Medicine, and several senior members of the Division were present at the various sessions. The Hanford Operations Office was represented by Mr. J. E. Travis, Manager, and others.

The Minutes of the 77th meeting were accepted without correction.

With respect to filling the two vacancies in the Committee membership and an additional appointment approved by the Commission (bringing the Committee's membership to nine), Dr. Dunham reported that the men considered at the last meeting had agreed to serve and their appointments are being processed: Dr. Fred J. Hodges (University of Michigan), Dr. Carl V. Moore (Washington University, St. Louis), and Dr. James Sterner (Eastman Kodak Co., Rochester, N. Y.).

The next meeting of ACBM will be held at AEC HQ on March 11 (Germantown) and March 12 (Washington), 1960. The following meeting is tentatively scheduled to take place at the Laboratory of Nuclear Medicine and Radiation Biology, University of California, Los Angeles, on May 20 and 21.

The business of the 78th meeting fell under three principal headings:

1. Short-lived isotopes and fallout exposure problem.
2. Dr. Dunham's report on miscellaneous matters
3. Review of the programs at the Hanford Laboratories supported by DBM

1. Short-Lived Isotopes and Fallout Exposure Problem

The short statement to be sent to the Commission (see Minutes of 77th meeting) is to be prepared by Dr. Dunham, using various material, including that supplied by Dr. Bugher and Dr. Dunning (DBM). This statement will be circulated to the Committee.

2. Dr. Dunham's Report

The Commission is expected to approve the Report on the National Laboratories that the Committee has already discussed.

Hearings on DBM's $ 5.4 million budget for FY 1960-61 will be held

at the Bureau of the Budget this m onth. This budget covers all items except construction, training, and education.

The Federal Radiation Council has appointed a second working committee whose members are experts in the various specialties that bear on the assessment of radiation hazards. Dr. Victor Beard will represent the AEC. The committee is to function full time and will be funded by HEW and AEC for consultant time. The Committee is to prepare a statement on the current status of radiation hazards in the United States that will serve later as a basis for promulgating standards of safety.

The Rollex watch hazard was detected by Dr. Victor Beard by a chance observation. The watches in question could deliver a dose of 1 rad per hour at the surface of the bezel. The AEC is cooperating with the Company in getting these watches back from the public.

The recalculation of the neutron dose delivered by the Hiroshima weapon is progressing at the Los Alamos Laboratory. Mr. Robert Corsbie (DBM) is consulting with DMA in regard to speeding up the gamma-ray calculations.

The plans for the Florida State University program in molecular biology, approved at the last meeting, are now in the process of being implemented by the University.

3. Review of the Programs at the Hanford Laboratories Supported by DBM

The Hanford Atomic Products Operation, managed in its entirety by the General Electric Co., began with a plant costing $400 million; the operation is now in its fourth expansion period, and the eventual cost will be over $1 billion. Originally concerned only with plutonium production, reactor research and development have become increasingly important functions (plutonium recycling program, dual purpose reactors for power, and others). To separate the administration of research from production, the Hanford Laboratories were established in 1956. The total cost of their physical plant, originally $35 million, will eventually reach $75 million. The Laboratory research programs are about equally divided between production research and other types. A major part of the DBM supported program -- the Biology Program under Dr. Kornberg -- although administratively part of the Hanford Laboratories is physically separated from the parent organization by its location on another site, about 15 miles away.

The chief objective of the 78th meeting was to review the programs at the Hanford Laboratories supported by DBM from both the administrative and scientific points of view. As indicated by the discussion at the 77th meeting, recommendations concerning the Biology Program are needed on the following points: whether the program shall continue at Hanford and, if so,

at what level of activity; whether part or all of the program shall be placed under one of the region's universities; how such policy decisions can be executed fairly and efficiently.

The sessions of January 8 were occupied by a visit to the Hanford Laboratories and a review of their biological programs. The Laboratories are under the direction of Mr. H. M. Parker (Manager) and include among various departments three organizations that receive DBM funds: (1) Chemical Research and Development, described by Dr. L. P. Bupp, (2) Physics and Instruments Research and Development, described by Dr. W. C. Roesch, and (3) Biology, described by Dr. H. A. Kornberg. The radiation protection program which involves the entire Hanford Atomic Products Operation was described by Dr. A. R. Keene.

Mr. Parker stated that DBM is supplying $2.2 million in 1959-60 for the biology and medicine budget: of this, $1.2 million go to the Biology Program, $0.5 million to Chemical Research and Development, and $0.5 million to Physics and Instruments Research and Development. In addition, Biology receives another $0.2 million from other sources. The total personnel consists of 126 persons, including 72 scientifically or technically trained research workers and 13 supervisors. (A specially prepared booklet of the presentations was distributed to the Committee.)

The Biology Program that is directed by Dr. Kornberg occupies laboratories that cost $2.2 million, and involve 87 persons of whom 20 hold the doctorate and 20 the B.S. or M.S. degree. The following group leaders described their programs: D. E. Warner (Biological Analyses -- multiple service functions), R. C. Thompson (Metabolism, including radiation damage -- with emphasis on plutonium, ruthenium, strontium, etc.), W. J. Bair (Radioactive particle inhalation), R. F. Foster (aquatic biology -- current emphasis on P^{32} and Sr^{90} in Columbia River fish), J. J. Davis (Radioecology -- includes laboratory studies and participation in Project Chariot at Cape Thompson, Alaska), F. P. Hungate (plant nutrition and microbiology, including strontium and iodine metabolism), L. K. Bustad (Experimental animal farm -- including I^{131} and Sr^{90} studies in sheep and the newly developed miniature swine).

It was the opinion of ACBM that the Biology Program under Dr. Kornberg's direction is a productive one, and that its investigations are valuable with respect to the operation of the Hanford plant in particular and the biological and public health problems associated with the atomic energy industry in general. It is important that such work be continued and that its development be encouraged in its practical aspects and in its roots in fundamental biology.

At the Executive Session on January 9, attention was focused on the administrative and other problems reputedly associated with the Biology Program. In assessing the difficulties, ACBM had the benefit of conversations with Mr. H. M. Parker, Manager of Hanford Laboratories and

immediate supervisor of Dr. Kornberg, with Dr. Kornberg, and with Mr. W. E. Johnson, Vice President, General Electric Co. and Manager of the Hanford Atomic Products Operation. ACBM also had at its disposal the Minutes of the 66th and 75th meetings and the report made at the last (77th) ACBM meeting by the special investigating committee that had visited Hanford and the universities at Pullman and Seattle. Dr. Zelle (DBM) and Mr. Stanwood (DBM) two of the latter committee were present; also Mr. Travis and Mr. Englund of the Hanford Operations Office.

In the discussion with Mr. Parker, he expressed the following opinions: that the objectives of the DBM-supported work were protection of man and biota around the plant and the scientific questions related thereto; that certain parts of this program could only be done -- or should be done -- at Hanford; that other parts might be done elsewhere but were conjoined with the former in order to keep the scientific background of the program at a high level; that in the past, workers in the Biology Program had felt restricted with respect to attendance at scientific meetings, but a more liberal policy in this was being effected; that publication in the open literature of scientific work was not a problem; that no insuperable difficulties of principle stood in the way of establishing closer contacts with universities or other scientific organizations.

Mr. Parker estimated that about 50 per cent of the program was specifically site oriented. In commenting on the location of the laboratories, he noted that Foster's study of the reactor effluents should be located close to the reactors, but that the other projects now in that neighborhood could be better integrated with the Hanford Laboratories if moved to the vicinity of the latter. Mr. Parker stated that it would be difficult to get universities to do various studies now being done at Hanford.

Dr. Kornberg, as a background for his remarks, stated that the Biology Program would continue on its present course until a decision was reached, and that, furthermore, he and his staff would abide by the decisions made.

Dr. Kornberg stated that present administrative trends at Hanford were meant to bring biology in closer contact with the rest of the Hanford Laboratories; he indicated that this might hinder the growth of the Biology Program. With respect to general policy, he would like to de-emphasize monitoring measurements rather than increase them -- unless they are accompanied by parallel, carefully conceived biological investigations. He pointed out that the growth of monitoring, e.g., at the Columbia's mouth, will probably cut down the Biology Program. If DBM made suggestions regarding program orientation, he felt it would carry "some weight, probably". He stressed the need for the Biology Program to be freed from an administration oriented essentially toward the production program.

Dr. Kornberg's major objectives included the following: transfer the Biology Program to another administration (in effect, this implies separation from the Hanford Laboratories managed by Mr. Parker); orient the further evolution and growth of the program toward greater emphasis on (a) fundamental work in radiobiology and (b) chronic studies comparing the effects of various toxic and stressing agents with that of ionizing radiation in the life span of animals; introduction of graduate students into the laboratories; leaves of absence for scientific personnel to get higher degrees; university appointments (without pay) for the staff so that the students could take degrees under them; exchange professorships with the universities involving change in residence; exchange of scientific personnel with other laboratories for periods of a year or so.

Mr. Johnson stated that the Company is neutral in a contractual sense, and that it is quite willing to carry out the suggestions of the Commission with regard to the Biology Program. Realizing that many of the scientific activities of the Hanford Atomic Products Operations should be administered separately from the production activities, the Hanford Laboratories were established in 1956 under Mr. Parker. His charter stated that not more than 50 per cent of the Laboratories' work should be directly concerned with production research.

Looking ahead, Mr. Johnson's concern for the Biology Program has been twofold. First, the usual GE administrative policies for the transfer and promotion of personnel cannot be applied to the Biology Program, since GE has no other such program: therefore, the turnover of personnel considered necessary for the continued vitality of any program could not occur, and this would be particularly true here where almost all staff members are young men.

Secondly, he felt that the Hanford staff and AEC were being placed in the position of judge, jury and offender with respect to its monitoring activities. It would be better for an outside organization to be the judge or jury. Dr. Bugher pointed out that the creation of the Federal Radiation Council provided the answer to the second problem.

For the future, whatever may be done, Mr. Johnson believes it is vital to study the Columbia estuary and also other neighboring areas, and to publish statistics relating to their radioactivity periodically; it will also be important to contribute to the general problem of waste disposal.

Mr. Johnson noted the gradual change in nature of the Operation. Originally a production facility, it is now also concerned with reactor research and development (plutonium recycling program; dual purpose reactors -- plutonium production or power), and such research activities are likely to increase in the future. Administering the Biology Program as a research program that includes several broad interests may be psychologically encouraging to people in those divisions whose relation to production must inevitably become less.

Mr. Johnson emphasized his interest in the future of the program. If it remained at Hanford, its organization should be such that its quality and vitality would be high. Such a goal requires proper contact with the scientific community outside Hanford. With respect to local management, it could be arranged for Dr. Kornberg to receive his budget through Mr. Johnson's office instead of as now, if such an arrangement were considered helpful.

At its closed session, ACBM came to the following conclusions:

(1) The value of the Biology Program is in large measure the result of its orientation to the AEC's problems, particularly as these problems have been illustrated by or grown out of the Hanford Operation itself. In the age of atomic power, such problems developed in proper scientific fashion lead to results of great general interest. The program is now fruitful; it commands facilities that are somewhat crowded but adequate; most important, it involves an experienced group of investigators and technicians. ACBM recommends that this program should be kept together, that this is only possible by its continuance at Hanford, and that its continued productivity be encouraged.

(2) With respect to future administration, ACBM suggests that this be along the lines found successful in the national and other scientific laboratories. Arrangements should be made to insure adequate communication with the scientific world through library facilities, attendance at scientific meetings, visiting lecturers, and if feasible, exchange of personnel. Contact with the regional universities is, of course, desirable. Leave of absence to get a higher degree in some circumstances is also desirable. The precise administrative relationships between the Biology Program and the rest of the Hanford Laboratory is a matter that can be best determined by Mr. Johnson.

(3) With respect to future program, ACBM wishes to emphasize that this must be approved by DBM if it is to be funded by the AEC. ACBM recommends that the orientation of the Biology Program continue, as in the past, toward studies dealing with the radioactive and other toxic substances associated with reactor operation from several points of view -- toxicology, pharmacology, ecology, public health, and fundamental radiobiology.

Respectfully submitted,

Henry I. Kohn

Scientific Secretary,
Advisory Committee for Biology
and Medicine