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MINUTES

MEETING OF

ADVISORY COMMITTEE FOR BIOLOGY AND MEDICINE

Held at the

ATOMIC ENERGY COMMISSION

September 17 and 18, 1954

ADVISORY COMMITTEE FOR BIOLOGY AND MEDICINE

September 17-18, 1954

ATTENDANCE:

Members of ACBM	Dr. Shields Warren, Acting Chairman Dr. Charles H. Burnett Dr. Simeon T. Cantril Dr. Edward A. Doisy Dr. Gioacchino Failla Dr. Curt Stern
Staff of Div. of B&M	Dr. John C. Bugher Dr. Walter D. Claus Dr. Charles L. Dunham Dr. Paul B. Pearson Dr. Willis R. Boss Dr. Earl Green Dr. Paul LeFevre Dr. Nathan Hall Dr. Bernard Nebel Mr. Robert L. Corsbie Mr. Howard C. Brown Mr. Herbert Stanwood Mr. Edward McGarry Mr. Merril Eisenbud Mr. L. Joe Deal Mr. Ward Miller Mr. Morse Salisbury Miss Elizabeth Hower Miss France Chrestia Miss Rose Mary Elmo Mrs. Frances R. Montgomery, Secretary

Friday, September 17, 1954

Dr. Warren, acting as Chairman, convened the afternoon session of the 46th meeting of the Advisory Committee for Biology and Medicine held at the Atomic Energy Commission in Washington, D. C. at 1:00 P.M. The

morning session had been devoted to studying research proposals, reports and classified documents.

Dr. Warren asked Dr. Bugher to introduce Dr. Nathan Hall, a new member of the staff of the Division. Dr. Bugher, in presenting Dr. Hall, noted that prior to joining the staff of the Division he held an appointment as Professor of Agronomy at North Carolina State College. He replaces Dr. Butts who had returned to Oregon State University. Dr. Hall has been closely associated with the problems of the utilization of radioisotopes in agricultural research and enjoys a broad knowledge of plant physiology.

Dr. Bugher welcomed Miss France Chrestia, of the Program Analysis Branch, who had transferred from the New York Operations Office.

Review of Research Projects — A report on research projects approved since May was given during the morning study period. Dr. Bugher, however, explained the changes that had been made in the format and content of the report on "off-site" research contract proposals. It now includes a summary of each project written by either the investigator or by the person particularly responsible for the project.

During the discussion of the projects, Dr. Failla raised a question regarding the treatment of patients as was indicated on several projects and he asked as a matter of general policy whether defraying the cost of actual treatment of patients should be increased - - or should be maintained at the same level as at present. Dr. Warren replied that perhaps

a very good time to present this matter for discussion would be when a meeting is held at one of the special cancer hospitals at one of the installations where they are deeply concerned with problems of treatment for cancer patients.

Dr. Doisy inquired as to the progress that is beirg made by Dr. Paul Hahn at the Meharry Medical College on the "Use of Radioactive Gold in Treatment of Tumors". Dr. Cantril expressed interest in this project also. He asked how far this program had limited itself to use of gold. A general discussion followed. Dr. Dunham suggested that it might be well for Dr. Hahn to move on to something else because there is little new that has been developed scientifically since the initial impetus on the project in 1949. Dr. Failla brought out that nothing new has come out of Dr. Hahn's project recently and likewise there has been nothing new come out from many other projects elsewhere. On the other hand, Dr. Hahn's initial contribution was a very valuable one. He commented further that the Public Health Service had given the school support and it had been very well received and the funds were administered carefully. It changed the atmosphere of the school. "So I think this might be taken into consideration in this case. In regard to my statement about treatment of cancer patients, I think in this instance that it is quite justified to continue the support for the treatment of patients - for some time at least."

On questions propounded by Dr. Doisy on the increase of the size of the budget for this fiscal year for the University of Utah from $175,776 to $274,368, Dr. Claus explained that the increase is caused mostly by the large expense in developing and raising animals to have them available at the proper time - planning has to be done 18 months in advance in order to have material of the right age at the right time. Also, as was suggested by the Committee some exploratory work with strontium is now being done.

Dr. Warren followed by saying that in these facilities one is dealing with plutonium - which is one of the most difficult things to handle. There are far more costly precautions that have to be carried out in this work than in the average sort of research and undertaking.

The committee reiterated their previous expressions by saying that the summaries on the projects are extremely useful in enlightening them in the briefest possible time as to the work that is being emphasized and the progress that is being made thereon.

Dr. Warren expressed his thanks to the staff for having the report prepared in such an informative and concise manner.

The report on "On-Site Research Contract Proposals (Parts I & II)" is attached as Appendix A.

Statistical Trends in Biology Research Program - Dr. Green

Dr. Green reviewed the statistical trends in the biology research program with emphasis placed on the data obtained from the IBM equipment. Formal statements were

supplied which explained the code and the various categories that had been used to classify the projects. Dr. Bugher told of the interest that the Commission as a whole had taken in the statistical data that has been obtained from IBM equipment and how useful it will be to the controller, especially when material has to be prepared for the Bureau of the Budget for transmittal to the Congress.

Review of the Budget Mr. Stanwood briefly described the AEC budget for the fiscal year 1956. He mentioned the construction program which has an item for presentation to the Congress of $6.5 million for the Brookhaven Medical Center and reactor. The Commission budget includes $8.0 million in community facilities and some $30.0 million in equipment.

Mr. Stanwood spoke of the breakdown of the AEC budget which would allot $27.0 million to the Division of Biology and Medicine. In response to the General Manager's request that a readable approach be given to the budget in order that it might be more understandable to the Bureau of the Budget and the Congress, the following division of effort was presented: radiation effects on biological systems, $9.0 million; combating radiation detrimental effects, $3.4 million; beneficial application of atomic energy, $7.3 million; biomedical problems in atomic energy operations, $5.7 million; radiation equipment development, $1.0 million; vocational and special training, $0.6 million.

Current Activities of the Division of Biology & Medicine - Dr. Bugher

The first subject presented by Dr. Bugher under current activities of the Division was the international cooperation in the exploitation of the peacetime applications of atomic energy. He spoke of the President's announcement before the United Nations' Assembly in December, 1953 and of the many different facets of government operation as well as a certain amount of diplomatic participation that would be involved if the President's proposed program is going forward. Dr. Bugher explained that the international program would fall into three general categories, (1) reactors, particularly for power production; (2) applications of atomic energy in medicine; and (3) applications of atomic energy in biology generally, with particular reference to agriculture. He brought out that Mr. Tammaro is studying these problems prior to presentation to the Commission. Plans are being formulated for an International Conference which is to be held the latter part of next year either abroad or in the U. S. to discuss the peacetime uses of atomic energy.

In this connection, Dr. Bugher reported orally and presented a written statement on his observations concerning a Pan American program in peacetime applications of atomic energy as conceived during his visit to South American countries. He stated that there is a lack of realism in most South American countries with atomic energy programs. The problem therefore is one of education and growth along lines that are first fundamental and later into more elaborate ramifications. Dr. Bugher's

written statement listed several recommendations as follows:

(1) Establish two centers of isotope distribution in South America to be operated, under the advice and assistance of the Isotopes Division of AEC, by the Pan American Sanitary Bureau. Bulk isotopes, dollars costs paid, would be delivered to these centers for distribution. Lima is a logical selection for the Pacific Coast and Rio de Janeiro for the Atlantic side.

(2) Greatly increase the availability in the U.S. of facilities for special study and training of Latin American students. Simplify the procedures by having the respective U.S. Embassies apply whatever selective criteria are necessary. By keeping this program away from security areas and making the acceptance of the student dependent on his being granted a visa, apparent U.S. Government inconsistencies on security grounds would be avoided. While the AEC need make no charge for the teaching and use of facilities, the respective countries should provide the travel funds and stipends of their own students as their contribution to this part of the joint program.

(3) Initiate a conference to be held this year in Washington of representatives of all interested American governments for the purpose of consulting on the form and substance of an international cooperative atomic energy program for the area.

(4) Encourage an active program in agricultural applications of atomic energy through such means as duplicating the Brookhaven gamma

radiation facility in a midtropical region. This should probably be associated with existing Point Four activities.

(5) Approach the problem of reactor technology by developing a simple low cost device which could be useful in medical and biological applications at the same time serving as a means of teaching the fundamentals of reactor design and operation. Such an arrangement would also make a number of short half-life isotopes available.

(6) Consider this program as a part of any other geographical development but capable of running on its own as well.

(7) Note that while the development of agreements and policies must be through the established diplomatic channels, the cooperation at the technical level can be quite simple and direct. Careful coordination with existing program will be necessary.

A complete copy of the statement is attached as Appendix B.

The committee was greatly interested to learn that the General Manager has suggested to the Commission that we vigorously promote an international program with special emphasis on biology and medicine which would have as its first base the acceptance of students to this country. Also, enlarge our availability for special training and localities for special training all over this country.

Training Programs Dr. Dunham then told the committee of the preliminary plan for participation by acceptable foreign students and scientists in a program of training and research participation at AEC

facilities and institutions under contract with the AEC. In this connection, he said that the Division of Reactor Development had been planning a reactor training school in reactor technology and engineering which might begin in 1955 on a wholly unclassified basis. Also that the Division of Research is planning a radioisotope training course at Oak Ridge some time next spring open only to aliens. The contribution of the Division of Biology and Medicine is simply a matter of expanding what is now under way. It is felt that probably between 135 to 150 foreign students could be accommodated in various and sundry types of training within the next year, with training in industrial medicine; radiological physics; industrial hygiene; radiation instruments (theory and uses); and post doctoral research in biology and medicine for outstanding physicians and scientists.

Dr. Burnett inquired whether the initial selection would come from the country involved. Dr. Dunham said that the country would select the individual and he explained the details concerning how and where the person would be sent for training. Upon the conclusion of Dr. Dunham's remarks on the training program, Mr. Salisbury added some pertinent information concerning the distribution of unclassified and declassified publications of the AEC in the form of "libraries" to foreign countries.

Berlin Atomic Fair — Mr. Butenhoff spoke of the American exhibit at the Berlin Atomic Fair. He said it follows the general theme of the

peaceful uses of atomic energy and it is one of the many that is being sponsored by the USIA. It will include a complete three room hot laboratory fully equipped. The exhibit is to be shown in eight different cities in Germany and it is anticipated that one million persons will attend in Berlin alone with about one-third to one-half of these people coming from the East Zone.

Plans for Japanese Conference

Dr. Bugher told of a planned conference to be held in Japan in November, 1954. This conference would be on matters which are essentially those of environmental contamination, particularly in the marine field biophysics, and instrumentation permissible limits. It is a non-medical conference. Dr. Boss followed by giving an account of his visit to Japan with Dr. Lauren Donaldson, discussing with various Japanese scientists, marine biologists particularly, various aspects of the problems arising from the spring tests, notably with relation to possible contamination of fish and with some discussions upon the ways in which we arrive at permissible limits. Out of this series of conferences came the idea for an enlarged conference to be held in November, 1954.

Fall-Out Operation Castle

Dr. Bugher informed the committee of the continuing problems and developments as result of fall-out from Operation Castle. He paid tribute to the assistance provided by the staff of the NYOO in supplying equipment for surveying

the area and of the expeditious and successful manner in which it was handled. Mr. Eisenbud, who went to Japan as soon as the AEC learned of the fall-out on a Japanese fishing vessel provided the meeting with an interesting narrative regarding the problem. Dr. Claus and Dr. Pearson both spoke on fall-out problems as they concern their respective Branches - Biophysics and Biology.

Follow-Up Medical Examination of Exposed Population of the Marshall Islands

Dr. Bugher reported briefly on the follow-up medical examination of the exposed population of the Marshall Islands. He reviewed the first medical study and stated that all of the people have recovered completely as far as objective signs are concerned with the possible exception of very slight skin changes.

Comment and Recommendations of Committee Concerning International Program

In connection with the International Program and Dr. Bugher's recommendation as listed previously a broad discussion ensued. After a full consideration and a request for comments on the specific questions the following recommendations were made: the committee unanimously recommended that anything that can be done within the legal limits in the way of facilitating the distribution of isotopes throughout South America should be encouraged; that restrictions imposed by law or regulation should be kept to a minimum and that the responsibility for distribution - once the material has gone to the proposed centers should be centered

in the appropriate governmental agency. That everything that is possible should be done to create a sound public relations basis to make available training facilities on a wider and better established basis for those qualified individuals desiring to participate from foreign countries as provided in the staff paper reported on by Dr. Dunham (AEC 761). With regard to the International Scientific Conference, it was recommended that it might be wiser to work through scientific agencies rather than through government channels. That the problem of having it in the U.S. should be carefully reviewed by the State Department so that the requirements of the McCarran Act might not interfere with the attendance of foreign scientists.

Saturday - September 18, 1954

Minutes of Meeting Held at AEC June 25-26, 1954

The Acting Chairman reconvened the meeting at 9:00 A.M. and presented the draft minutes of the June meeting for consideration. The following changes were suggested:

Item (1)

Dr. Warren enlarged upon his previous statement as listed on Page 22 of the minutes of the June meeting giving a list of the research interests of the Armed Forces. He said that he though it would be helpful if a list could be obtained of the projects dealing with the biomedical aspects of atomic energy and the major projects of the Armed Forces such as at the Austin Center in Texas. —

Item (2) Subcommittee of ACBM re Suggestion of Alleviating Shortage of Manpower

A general discussion was held on the feasibility of establishing lines of contact and communication to institutions in their geographic area to advise them of the facilities and means of support that are available for worthwhile research projects and for the need of potentially productive people. The problem was considered as being critical. Dr. Failla brought out the importance of aiming at the students of high school level. In other words, try to induce young men of promise to go into science when they are deciding what college to matriculate with - - and what sort of a career to follow. Dr. Failla stated further that it might be wise to start clubs in high schools - some schools are more directed toward science than others - and perhaps a small amount of money could be allocated to such work.

The acting chairman asked Dr. Failla to assume the responsibility of acting as chairman of the subcommittee and with the assistance of the full committee to find some ways and means of alleviating the shortage of scientific manpower. Dr. Failla agreed to take over the new assignment.

Item (3) Naming nominees for membership to the ACBM.

After an explanatory statement by Dr. Warren regarding the naming of nominees to membership on the ACBM it was voted to change the last paragraph, Page 25, to read as follows:

"The committee voted unanimously to submit the above names to the General Manager for the consideration of the Commission with the preference to be given in the order named."

Atomic Energy Act of 1954

Mr. Brown reviewed the probable impact of the Atomic Energy Act of 1954 on the biology and medical program. The acting chairman thanked Mr. Brown for the summary and said that it is an extremely challenging series of responsibilities that the Congress has placed on the AEC and its staff. He asked that a complete copy of the transcript of Mr. Brown's remarks be provided each member of the committee. A complete transcript of Mr. Brown's remarks is attached as Appendix C.

Health Physics Program - Dr. Claus

Dr. Claus opened the discussion of the Health Physics Program speaking of both the research program and the health physics problems. Two statements concerning the program were presented for review.

Dr. Claus stated that the basic biophysical research program requires encouragement. Weapons testing is expected to continue to demand much of the time of the Biophysics Branch while the problems associated with "Gabriel and Sunshine" are increasing in number and scope rather than diminishing in number.

More attention will be given to bioassay work in plants, animals and humans to improve estimates of permissible body burden and exposure

from radioisotopes. Disposal of radioactive wastes at sea is beginning to draw the interests of oceanographers. The cost of feasibility studies of disposal at sea will be high. Dr. Claus then spoke on the "Backlog of Health Physics Problems". He said that in the General Manager's Bulletins the Division of Biology and Medicine is assigned the responsibility -- the development of standards and policies for safeguarding the health of atomic workers and the general population against hazards arising from atomic energy operations.

Dr. Claus brought out that manpower shortage in the Biophysics Branch is such that many important problems in health physics can be treated only superficially. Often other Divisions in the AEC must devote some of their time and effort to problems logically falling in the Biophysics area of interest.

He stated further that contractors are being delegated more responsibility in handling their health physics problems and this has resulted in wide diversity of regulation standards for health safety and in procedures for dosimetry and health protection. Some are relaxing their standards of safety. Whether this is good or bad - - has not been determined. It was pointed out this impasse indicates the need for additional health physicists to devote full time attention to such problems.

The need of a manual on radiation protection for use by AEC and extra AEC activities has been underlined by the increasing use of

reactors for research, medical therapy and energy. The public is becoming increasingly alarmed with plans for reactors in populated areas and the attendant danger. A single comprehensive authoritative manual would greatly relieve apprehension and also serve to prevent the development of a heterogeneous series of codes and regulations by many independent groups. An example of the unavoidable situations that arise because of this void on our health physics staff is the Borax reactor incident at Idaho where the Biophysics Branch received its information after-the-fact from, oddly enough, the Weather Bureau. Dr. Claus stressed the point that more assistance in these areas of responsibility is needed.

Trends in the Radiation Instruments Program

Mr. Butenhoff reviewed the trends in the radiation instruments program and prefaced his remarks by reading the following excerpts from an article by Dr. A. V. Astin, Director, National Bureau of Standards, which had been published in the September issue of "The Journal of the Instrument Society of America". "The impact of instrumentation is extremely wide, affecting not only science and engineering but also manufacturing, commerce and government activities. Measurement is so important to the progress of science that all scientists sooner or later become involved in some phase of an instrument problem. With the increased range and complexity of science, the limit as to what can be observed or studied is frequently set by the characteristics of available instruments. The

trend towards measuring more minute effects, or observing events occurring in shorter times, or studying phenomena very remotely from our ordinary senses of perception places an extreme demand on the instrumentation process, frequently requiring an elaborate chain of transducers, amplifiers, differentiators, integrators or counters. On the other hand, advances in science and engineering have provided many new materials, devices and techniques, so that a vast array of radically new types of instruments are now available to accelerate the work of scientists. Furthermore, the instruments of instrument principles evolved to meet the needs of one area of science find increasing utilization in quite different area of scientific activity. For example, the electronic tools developed to meet the needs of the physical scientists are daily finding new applications in medicine and biology."

Mr. Deal followed and gave a very interesting review of a study made on the growth and size of and statistics on the radiation instruments industry. He described the RIB exhibit at the Convention Hall in Philadelphia at the First International Congress and exhibit of the Instrument Society of America. The exhibit was comprised of four booths and the display emphasized the importance of instruments to the different atomic energy activities.

Future Continental Tests

Mr. Corsbie provided the committee with a statement of research trends for the Civil Defense Liaison Branch; a statement on Tentative Civil Effects Program

for next continental test series and a statement of preliminary Civil Effects Group Programs. He gave an oral review of each subject which included the changes in the organization for the test series.

Next Meetings — The forty-seventh meeting of the ACBM is scheduled to be held at the University of California in Los Angeles, California, on December 3 and 4, 1954. Upon an invitation received from the President of the University of Washington, the committee has tentatively planned to visit the AEC projects at the University of Washington on January 13, 1955 in conjunction with their scheduled meeting at the Hanford Operations Office on January 14 and 15, 1955.

Adjournment — The meeting adjourned at 12:45 P.M.