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ADVISORY COMMITTEE FOR BIOLOGY AND MEDICINE

The fifty-third meeting of the Advisory Committee for Biology and Medicine was held at the Atomic Energy Commission, in Washington, D.C., on Wednesday, November 30, Thursday and Friday, December 1 and 2, 1955, with the following persons in attendance:

ATTENDANCE:

Members
of
ACBM

Dr. Gioacchino Failla, Chairman
Dr. Shields Warren, Vice Chairman
Dr. Charles H. Burnett
Dr. John C. Bugher
Dr. Simeon T. Cantril
Dr. Edward A. Doisy
Dr. H. Bentley Glass

Staff of
Division of
Biology &
Medicine

Dr. Charles L. Dunham, Director
Dr. Charles L. Shilling
Dr. Roy Albert
Dr. Willis R. Boss
Dr. Walter D. Clauss
Dr. Forrest Western
Dr. Sterling Emerson
Dr. Paul B. Pearson
Dr. John N. Wolfe
Dr. Douglas Worf
Mr. Howard C. Brown, Jr.
Mr. Robert L. Corsbie
Mr. Ward Miller, Jr.
Mr. Robert L. Butenhoff
Mr. Richard Johnston
Mr. Herbert A. Stanwood, Jr.
Mr. Edward McGarry
Mr. Frank C. Legler
Mr. Herbert Talkin
Mr. James F. Haggerty
Mr. Robert O'Neill
Mr. Joseph Fernandez
Miss Rosemary Elmo
Miss France Chrestia
Miss Elizabeth Hower
Mrs. Frances R. Montgomery (Secretary)

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Staff of AEC	Mr. Lewis L. Strauss, Chairman Mr. Thomas E. Murray, Commissioner Mr. A. Tammaro Cdr. John Crawford Mr. Richard Hallinan Mr. John Hall Mr. Frederick Hobbs Mr. Ralph Strom Mr. W. K. Davis Mr. Herbert Hoffman Mr. Duncan Clark Mr. William H. Berman
NYOO	Mr. Merrill Eisenbud
ORINS	Dr. William Pollard

Wednesday, November 30, 1955
9:00 A.M.

The Chairman convened the meeting and stated that the Committee was fortunate indeed in having Mr. Strauss with them and he asked Mr. Strauss to make a few opening remarks.

Mr. Strauss said that he was particularly happy to be present on the occasion of Dr. Dunham's first meeting in his capacity as Director of the Division. He stated that the Division is unique in that it has had but three Directors, Dr. Warren, Dr. Bugher, and Dr. Dunham and all three are attending this series of meetings.

During his remarks he spoke of his recent trip on the "Nautilus" and of the future use of fissionable material for the propulsion of ships.

Review of Research
Program

Dr. Shilling opened the discussion by speaking of the vastness of the research program in the biological and medical fields and specifically referred to eight different items as samples of areas of interest. He asked Mr. Stanwood to speak on the distribution

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of fiscal support, growth of the biological and medical program budget wise, and to compare the new and renewal awards by year for off-site research.

Mr. Stanwood spoke of the Budget for 1957 as presented to the Bureau of the Budget through the AEC in the amount of \$30,500,000 and of the cutback in the request for funds by \$1,250,000, and that an appeal had been made for a substantial restoration of the cutback or \$1,000,000.

Mr. Strauss interjected at this point with the statement that during a recent hearing before the Budget Bureau that the appeal for the restoration of funds had been approved.

Mr. Stanwood explained the need for the increase of funds at the Laboratories and he presented an interesting graph that depicted the breakdown of the moneys allocated to programs dealing with radiation effects, combatting radiation effects, the beneficial applications of atomic energy, biomedical problems in atomic energy, etc.

Mr. Stanwood presented a statement entitled "Comparison of New and Renewal Awards on the Offsite Research Contract Program."

Mr. Stanwood emphasized the tight spot that the Division was in at the present time with respect to funds for new contract proposals.

Dr. Doisy was concerned with the small number of new contracts and inquired whether a real study had been made of the contracts that had been in existence for years and if their accomplishments were

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keeping up with their proposals?

He said further that it was apparent over a period of some eight years since the inception of the research program, a great many young men have developed and they should be capable of doing independent research and that they are in need of funds. With a very small proportion devoted to new contracts it is possible that these people are not getting support which would be exceedingly valuable to them and to the United States.

Mr. Stanwood pointed out that the statistics reflect the importance of consideration by the Committee of how the program should be evaluated.

Inhalation Hazard
from Radioactive
particulates

Dr. Albert reported on the current status of the AEC research program in pulmonary deposition and

clearance of particles as well as radiation lung cancer. He told of the inhalation exposures from radon in the mines and in the mills where the ore is processed. Also, he discussed the interesting studies that are being undertaken at the University of Rochester and in other areas.

In summary, Dr. Albert stated that the major gaps in the field are the lack of information on the relationship between particle size and site of deposition in the lung as well as the lack of any real information on the relationship between lung dose and the incidence of cancer in humans.

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Dr. Cantril expressed the hope that there would be some attention given to radiation rates. He said attention should be given to plutonium inhalation in man and transportation into the blood system, bones, etc., and it might be well to concentrate more of this work in some of the On-Site Research groups.

After a full discussion, Dr. Shilling asked the Committee if in their opinion the coverage for this study seemed adequate?

The Committee agreed that at this time the study appeared to be amply covered.

Oceanography and
Marine Biology

Dr. Claus and Dr. Boss presented jointly a status report on the basis of interest of the AEC in the Oceanography and Marine Biology Program, how extensive the program is, some of the highlights of accomplishment, and plans for continued or future research. Of major importance was the discussion of waste disposal in the Sea. It was Dr. Claus personal conviction that sea disposal must be the ultimate fate of large scale reactor fission products. Also, he brought out that serious consideration has to be given to health and safety for human populations.

Dr. Claus described the projects that have been negotiated to initiate these studies as well as the proposals that are now being considered to further implement the program.

He indicated that various nations at the Geneva Conference had expressed

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serious concern at the possibilities of indiscriminate dumping of radioactivity into the sea. They in general had urged some form of international control. Dr. Claus believed that the AEC should obtain some data and clarify its ideas before arbitrary controls get such a strong hold that sea disposal becomes politically impossible.

He concluded his remarks by speaking of the urgency of the problem and of asking for the moral backing of the Committee in order that approval may be sought of the General Manager and the Commission.

Dr. Boss reviewed the marine biology program which consists of several distinct categories or fields of research, namely the Hanford Program, Dr. Donaldson's Program at the University of Washington, the Off-Site Programs and special projects in marine biology.

Dr. Boss enlarged upon his previous statement concerning WIGWAM (See Minutes of meeting held September 9 and 10, 1955.)

In this connection he said that with future tests being planned for the spring in all probability the Japanese would be vitally concerned.

Dr. Pearson said that the problem was an international problem and that it might be well to bring the Japanese into the program at an early date and get in touch with their fisheries people and plan a cooperative program outside of the closed area.

After a full discussion the Committee recommended that full advantage be taken of any future test in the Pacific Proving Ground, to increase

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its knowledge of surface and deep ocean currents and the transmission of radioactive fallout through the marine food chain to man.

Further, because of the possible future need for disposal of radioactive wastes in the oceans, the Committee felt that the AEC should expand its support of oceanographic studies directed at gaining more precise knowledge of the movements of water at greater depths.

Ecology Program Dr. Wolfe presented an interesting summary on the Ecology research program. He brought out that it may be well to broaden the present program both with regard to fundamentals and geography. He pointed out that numerous ecological researches are under way scattered throughout the several branches.

It was proposed that research areas of possible interest to the AEC might include:

1. The study of whole communities in essential equilibrium with environment (primeval areas) as well as domesticated communities in various climatic areas of the U.S., in terms of fallout, reactor wastes, experimental techniques with isotopes.
2. The support of fundamental biological surveys in the field in various climatic regions of the U.S., anticipating the widespread establishment of reactors (or future technological developments) in these areas. These areas would require long-time protection.
3. The study of high mountain habitats in region tests, aquatic and Terrestrial; in terms of fallout, natural dynamics of biological cycles, plant and animal populations in naturally radioactive areas (mineral springs, uranium concentrations).
4. Exploration of the possibility of Weather Bureau stations and Agriculture Experiment Farms Cooperatives in carrying out certain phases of the program. But it is suggested that field studies be major, laboratory investigations supplemental.

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5. A major objective could well be the development of an "awareness of responsibilities" among ecologists by utilization of scientific meetings, conferences, and publication of material germane to ecological researches.
6. The training of radio-biologists in field techniques remains a problem.

Instrumentation Mr. Butenhoff gave a general review of the Radiation Instrumentations Branch's research program. He said that the Branch supports a one-half million dollars off-site research program in instrumentation and that roughly estimated approximately ten million dollars a year was being spent on on-site research and development. Most of this work is being carried on by scientific investigators in instrument divisions in the various Laboratories.

Mr. Butenhoff displayed several photomultiplier tubes ranging in size from a small three-quarter inch diameter tube to the large sixteen inch diameter tube and he explained the exact function of each tube. He described the research projects that are underway concerning radiation instruments.

Dr. Bugher brought out that one of the things that is very important in this area is the use of radioactive materials in medical diagnosis and in this connection the cost of instruments to be used in medical research was discussed.

Genetic Program Dr. Emerson summarized the genetic program, listing the various methods of approach, areas of particular accomplishment, extent of the total program and plans for the future.

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He spoke of the interest of many persons in the genetic effects of irradiation and of the research projects that concern human populations. A full discussion ensued.

It was Dr. Glass' opinion that the present program lacked focus on the specific question, genetic radiation to human populations, for which an answer is needed because of the current state of world opinion. He said further that it might be well to re-evaluate the program by giving tactful suggestions to competent people that certain things need to be done. In this connection he stated that he had been urging Dr. Russell of Oak Ridge for a number of years to broaden his program by working on mutation in the female mouse. What is needed is a good deal of programmatic research, perhaps to develop a genetic investigation, based on tissue culture techniques.

Dr. Failla pointed out that the greatest and most important discoveries come not from directed research, but from just playing around with something, by someone who has an idea, and eventually he discovers something that no one has thought of before.

Dr. Shilling stated that there are people in the country who are very happy to work on problems either of their interest, or problems that they think will be significant to the national effort. He believed that the National Research Council is an excellent media to initiate such work.

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Meteorology Program Dr. Worf oriented the Committee on why the AEC is supporting meteorological research. What type of research in this area is being supported and how extensive is the program.

He spoke of the assistance that is being received from the U. S. Weather Bureau. Specifically, as an example, a competent California meteorologist had claimed that a lowering of temperature followed each detonation AEC nuclear tests in Nevada, Spring 1955.

The Weather Bureau reviewed meteorological conditions and fall-out activity in this region and concluded that the tests had no observable effect on temperature.

Dr. Worf reported on the high lights of what the Division is doing in cooperation with others to promote the programs of the International Geophysical Year. He said that the IGY is an effort by 40 countries to obtain synoptic data during 1957 and 1958 on various geophysical sciences. He stated that an ad hoc panel had been set up to study radioactivity in the air as suggested by the Netherlands National Committee. Dr. Dunham is acting as Chairman of the ad hoc panel of the U.S. National Committee to consider the subject. A report on the IGY is to be made at a later date.

Cancer Program Mr. Haggerty reviewed the history of AEC participation in cancer research, extent of the program, type of cancer research supported, recent accomplishments and the future plans for the program.

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He spoke of the progress made during the FY 1955 and the planned program for the current fiscal year. It is proposed for the FY 1956 that a total of \$2,651,000 will be expended for cancer research:

ORINS (Medical Div. Dr. Brucer	575,000
U of C - Medical School (Dr. Stone)	220,000
ANL (Biology Div. - Dr. Bruce)	171,000
BNL (Dr. Farr)	330,000
U. of Rochester (Dr. Rale)	38,000
ACRH (Dr. Jacobson)	1,150,000
Off-Site Research	167,000
	<u>2,651,000</u>

During the discussion of the program, Dr. Burnett expressed concern at the setting off of cancer research in the way that it has been done in the last few years. He said that "if the amount of money that has been spent on cancer research, if it could have been directed, some of it at least towards basic medical and biological research, we might be much further along than we are. It seems to me that every year it get bigger instead of smaller, which raises the second question."

Dr. Burnett addressing Dr. Dunham asked - "Do you anticipate that this is about where you will level off, or do you anticipate increasing specifically in the cancer field?"

Dr. Dunham replied that it will increase somewhat at Brookhaven as the new facility become available - Argonne Cancer Research Hospital is pretty near its peak, however, they still wish to build a "hot lab" in the basement next year and that will increase their operating cost. ORINS has about leveled off. University of California will not be any greater and at Argonne National Laboratory there will not be any change.

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Dr. Warren brought out that the public in general expects the AEC to be exploring what heavy levels of radiation and specific isotopes can accomplish in the cancer field.

Dr. Cantril interjected at this point to say that "if the layman would ask what has this two and one-half million appropriation per year accomplished this year and what has it done last year and will it do next year to significantly cut the cancer mortality for 1955 and 1956, I think we would be hard put to say that there has been any significant decrease in cancer mortality as a result of funds expended by the AEC to date."

Dr. Warren said that nearly any form of biological research can ultimately help on the cancer problem.

Dr. Burnett reiterated his previous statement that "we might have been better off if we had put more money into basic research and less at the higher level,"

Dr. Warren pointed out that a great deal has been accomplished by this directly applied work in the saving of funds to individual institutions. He believed that it was "quite properly the function of the AEC to see what the value of these new techniques are, so that, the hospital at Tulane or St. Louis does not have to put in a series of these units simply because it has become possible from the physical standpoint."

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Dr. Dunham expressed gratitude to Dr. Shilling for arranging the review of the research program.

The meeting was recessed at 5:15 P.M. to be reconvened on Thursday, December 1, 1955, at 9:00 A.M.

THURSDAY, DECEMBER 1, 1955

The meeting was reconvened by the Chairman with all members present at 9:00 A.M.

Current Activities of
Division of Biology
and Medicine

The Chairman asked Dr. Dunham to open the morning session by reporting on the current

activities of the Division. Dr. Dunham opened his remarks by speaking of the Tripartite Conference which was jointly held in Washington under the auspices of the Department of Defense with AEC participation, with people from Canada and the United Kingdom. He stated that this conference was set up under the new Act and it was developed between the military groups in England and the Department of Defense.

Dr. Dunham spoke of another important activity in which he participated which was the passage of the United Nations Resolution entitled "The Effects of Atomic Radiation." The Resolution had been introduced by Mr. Lodge. He told of a scientific committee that was to be established under the Resolution that would have representation from 15 countries, including Japan which is not a member of the United Nations.

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The purpose of the Committee was to receive and assemble in appropriate and useful form, radiological information furnished by states, members of the United Nations or from members of specialized agencies.

The Committee would make annual progress reports and develop by July 1, 1958, or earlier, if the assembled facts warrant, a summary of the reports received on radiation levels and radiation effects on man and his environment.

Mr. Brown commented at this point to say that he was sure that Dr. Dunham had not seen it, but that Chairman Strauss had received a letter from the U.S. Delegation to the United Nations highly commending the person that AEC had sent to the United Nations to assist in this work and lays the fact that the charter of the committee is more reasonable in scope and sound in technical content through the contributions of this person.

Dr. Dunham thanked Mr. Brown.

In connection with the discussion on the "Resolution," Dr. Failla suggested that the resources of the International Committee on Radiation Protection should be utilized in correlating the material.

Dr. Shilling told of the three day meeting of the Military Surgeons held in September at which they voted to welcome the AEC as part of the group. Official action will be taken on this matter at a later date.

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That entire program was devoted to medical aspects of disaster problems, handling mass casualties, atomic medicine, radiation injuries, etc. The Committee was pleased to learn that the report of the Joint Commission to Investigate the Effects of the Atomic Bomb in Japan and as edited by Dr. Ashley Oughterson of Yale University has gone to press.

Dr. Dunham told the Committee that oxygen 17 is now available in reasonable pure form in Russia and Israel. He considered it to be a terribly important development and more information may be obtained about it from the University of California at Berkeley.

McKinney Panel Dr. Dunham briefly mentioned the McKinney Panel and of the material that had been prepared by Dr. Western and Dr. Pearson for certain of the conferences. He said that the group had been established by the Joint Committee of Atomic Energy with the mission of looking 25 years ahead to the impact of peaceful uses of atomic energy.

Note: A copy of the full report was mailed to each member - February 3, 1956

Personnel A brief discussion was held on the problems of staffing
Div. of B.&M. the Branches of the Division. Dr. Dunham spoke of the welcome additions to the staff in the Medical Branch.

Land Grant College Dr. Pearson said that he had attended the Land
Meetings Grant College meetings which were held at East Lansing, Michigan. He spoke of a paper that had been prepared by

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Dr. J.W. Buchta, which reflected his personal views concerning the Problem Investigation in Government Support of Research and Graduate Work. Dr. Buchta serves Executive Chairman of the Government-University Relations Committee which had been set up by the National Science Foundation.

Note: A copy of the paper was mailed to each member of the Committee in December, 1955.

Status Report on
UT-AEC Agricultural
Research Program

Dr. Pearson gave a status report on the
UT-AEC Agricultural Research Program. He

said that the project was completely staffed and that he was favorably impressed with the additional personnel. He stated further that there has been a move to substantially reduce operating costs of the farm.

Dr. Pearson read the following resolution that the Committee had recommended at the meeting held in Oak Ridge on May 5, 6 and 7, 1955 regarding the program and asked the Committee to discuss the resolution:

"It is recommended that the AEC should continue their support of the UT-AEC agricultural research program, and it was suggested that small committee be appointed to consider ways in which even greater advantage might be taken of the unique facilities."

A full discussion ensued.

The Committee restated their previous views that a small committee should be appointed by the Director of the Division of Biology and Medicine

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for the purpose of conferring with the staff at the University of Tennessee on problems concerning the use of the gamma field and radiation facilities for work with large animals.

Atomic Bomb Casualty Commission Dr. Burnett reported on his recent trip to the Atomic Bomb Casualty Commission in Japan as a representative of the AEC and ACBM along with a National Academy sponsored group for the purpose of studying the program. It was the feeling of the group that the new program which is now contemplated should be continued by the AEC.

Dr. Burnett expressed concern over the present status of ABCC and of its future. The former relates to a general disintegration in morale of the ABCC staff which is counter-balanced only in part by the present Director's excellent handling of ABCC-Japanese relations.

The Committee felt very strongly that the NAS should be urged either to correct the situation by appointing a scientific director of considerable stature or that AEC and NAS jointly seek out some other body such as Associated Universities, Inc. or a university to be the operating contractor for ABCC. It is felt that it would be helpful for the Director of the Division of Biology and Medicine to write a letter to the President of the NAS expressing the ACBM's and the AEC's concern in this matter.

Note: A letter concerning the problem was sent to the President of the NAS from the Director of B & M on Dec. 20, 1955. A copy was given each member of the Committee at the meeting held on 1/14/56.

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Division of International Affairs

Mr. John Hall, Director of the Division of

International Affairs summarized the activities

of that Division. He spoke of the bilateral agreement with Japan and of its limitations. The purpose of this agreement is to provide a basis for Japan to have a research reactor. The reactor agreement with Japan contains a specific provision wherein there will be an exchange of information with Japan on an unclassified basis.

Mr. Hall spoke briefly of a meeting that would take place in January, 1956 at the instance of the State Department which will concern itself with the new International Atomic Energy Agency. The purpose of this Agency is to promote the peaceful uses of atomic energy throughout the world.

Note: Commissioner Murray entered the meeting during this discussion.

Dr. William Pollard, Director of ORINS told of his recent visit to the opening of the USIA Atoms for Peace Exhibit in Japan. He was impressed with the enthusiasm and interest displayed by the Japanese scientists and at their hopes of obtaining a research reactor.

Mr. Hall stated that there are presently about 25 bilateral agreements with various countries. He urged that in the calendar year 1956 that more representatives of the AEC should travel to the United Kingdom as well as to Belgium and Canada to bring persons closer together so that through this mechanism - gains would be made from the bilateral agreements.

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Status Report on
Genetic Conference

Dr. Emerson gave a status report on the Genetic Conference held at Harwell on September 19 and 20, 1955. He said that it had been set up by the British Atomic Energy Authority and it was made up largely of geneticists from the United Kingdom, 5 from the United States, 1 from Sweden and 2 from Canada.

He reported on the ad hoc Committee which met in Washington at the AEC on October 27, 1955, to discuss the desirability of expanding the genetic work with mice and where was the best place to have this work carried out. He said that the panel did feel that this work on mouse genetics should be expanded in order to get pertinent information in a shorter length of time and that the best place to make this expansion and have the work done was with Dr. Wm. Russell in Oak Ridge.

The cost of expanding the genetics program was thoroughly discussed. In this connection Dr. Dunham stated that he had presented this problem to the Commission and that they had indicated to the General Manager that the problem should receive a high priority. Therefore, in all probability funds will be made available in the near future to remodel the present facilities at Oak Ridge to take care of the expansion in the mouse genetic program.

Dr. Failla in summarizing the discussion stated that he thought it would be wise not to extend the program too far until reports have been received from the National Academy of Sciences Committee.

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He brought out that if we attempt to develop the genetics program too rapidly, there will be a considerable waste of money and effort.

Mr. Murray interjected at this point to say that he believed Dr. Failla's remarks were very sound and sensible and he felt that whatever recommendation was made by the Committee on the genetics problem - that it would receive the wholehearted support of the Commission.

Status Report on
SUNSHINE

Dr. Claus and Mr. Eisenbud reported jointly on the status of SUNSHINE with particular emphasis on the long range aspects. Dr. Claus spoke of the classification problem and said that every phase of the project has been declassified except a statement of analysis of foreign samples.

STRONTIUM Project

Dr. Claus gave a brief summary of the radio STRONTIUM work.

Federal Civil Defense
Relations

Mr. Corsbie brought the Committee up to date on Federal Civil Defense Relations. He said that a serious reappraisal of AEC policy in the area of civil defense is indicated. He explained several of the problems that are confronting the FCDA - concerning their responsibilities and organization. Mention was made of the possibility of forming another department - also of combining the Office of Defense Mobilization and FCDA under the direction of the President.

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Referring to the reappraisal of AEC policy -- Mr. Corsbie told of the request of FCDA for the assistance of two persons to be sent to Battle Creek, Michigan for an indefinite period.

In this connection Mr. Corsbie told of his visit together with Dr. Dunham to Battle Creek to discuss FCDA problems and of the two day meeting in Chicago. At that time it was agreed that Civil Defense needed assistance in two areas -- one, guidance concerning problems associated with civil defense supported research, and two, practical applications,

Another item of great significance to FCDA and the AEC relationships is the revision of the "Effects of Atomic Weapons" handbook. The Civil Defense Liaison Branch is working closely with Dr. Glasstone in revision of this book.

Declassification of Reports

Mr. Corsbie led the discussion on the declassification of reports.

The Committee was gratified to learn of the beginning progress toward declassification of declassifiable reports already in the hands of the FCDA and of the plans for getting substance out of the undeclarifiable reports and making it available for all concerned in unclassified form.

Operation ARME

Mr. Corsbie summarized briefly the activities under Operation ARME. He said that it was an area radiological

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monitoring survey for the FCDA - with twenty-seven selected participants, to demonstrate the area radiological equipment and techniques developed in the Health and Safety Laboratory of the New York Operations Office for use in connection with continental overseas tests.

Mr. Eisenbud commented that the purpose of the exercise was fulfilled because the FCDA had decided to go ahead with a procurement program.

Status of FCDA Mr. Johnston of the Radiation Instruments
Radiological Defense
Instrumentation Program Branch displayed the instruments that represent the present status of development of the radiological defense instrumentation program of FCDA. He spoke of the development of the specifications for these instruments and of the cooperation given by the AEC in conjunction with other government agencies and industry to FCDA in drawing up the specifications of the instruments into final form.

Note: Mr. Tammara entered the meeting.

Research and Industrial Mr. Tammara gave a brief summary of the
Development Program Research and Industrial Development Program.

The Committee was interested to learn that the Commission had requested that the staff review the entire fellowship program of the government with the objective that AEC pioneer in the broad concept of this fellowship program in order to accelerate the training of our scientists. A report will be made on this subject at a later date.

At this point, Mr. Tammara introduced the next speaker - Mr. Kenneth Davis.

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Civilian Power Reactor Program Mr. Davis, Director of the Division of Reactor and Development addressed the Committee on the Civilian Power Reactor Program. Mr. Davis spoke of the four major reactor experimental programs which are in the process of being constructed.

Dr. Failla inquired whether consideration had been given to the cost of radiological protection in the design of these reactors?

Mr. Davis commented that "in the general area of really good waste disposal completely confining the fission products and storing them forever, I am afraid that if this were insisted upon, that we would not have power reactors for a very long time to come."

Training Program Mr. John Kaufman spoke of the present policy which permits the AEC to assist universities and other educational institutions or hospitals to acquire research reactors. Under this policy, fuel elements for a reactor are made available to a university or other non-profit group without cost.

Mr. Kaufman outlined the AEC training programs in the field of reactor technology. He specifically described the training program for students as well as for faculty at the Argonne National Laboratory.

The training program for faculty will be initiated during the summer of 1957. Dr. Bugher inquired whether the proposed summer institute would extend to faculty members of foreign universities or is it limited only to U. S. citizens?

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Mr. Kaufman replied that the first faculty class will be limited to Americans, however, it is hoped that in the coming years to make one class available to foreign faculty.

The Committee expressed great interest in Mr. Kaufman's remarks regarding the training programs.

The meeting recessed at 5:15 P.M. to be reconvened on Friday, December 2, at 9:00 A.M.

FRIDAY, DECEMBER 2, 1955

The Chairman reconvened the meeting at 9:00 A.M.

Dr. Shilling led the opening session by reviewing items of general policy.

Teletherapy Studies The question of the advisability of continuing with further support to teletherapy in respect to actual grants to specific institutions to conduct teletherapy with cobalt or cesium as part of the medical program was thoroughly discussed.

Mr. Haggerty said that the AEC is presently supporting five such programs and it is not anticipated that there will be any more new projects supported in this field of research. Dr. Dunham substantiated this statement and said that the program is not to be expanded and that the research projects in teletherapy will be carried along for about a period of five years.

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Dr. Cantril asked Mr. Haggerty if he had any idea of the number of cobalt sources in use in teletherapy?

Mr. Haggerty then supplied the Committee with a paper that listed the number of Installed Teletherapy Units with more than 1000 curies (20 in number) and 24 Units with less than 1000 curies.

Dr. Failla raised the question of whether this function did not belong to the United States Public Health Service? Also, what is the function of the Division of Biology and Medicine, to help in research or to help in therapy?

Dr. Failla said he was not talking against this, "I am talking about whether it comes properly under AEC or the USPHS when it deals with treatment of patients."

Dr. Durham stated that the action of this Committee and the Commission a year ago in setting the rules for subsidization of radionuclides, - that action was implicit - that we do not support therapy for therapy's sake.

Upon the conclusion of the discussion the Committee unanimously approved the following motion:

"That the Committee endorses the present policy of the Division of Biology and Medicine in not expanding the support of teletherapy evaluation studies."

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Research Evaluation Dr. Shilling gave a general presentation of various methods of evaluating new research proposals and renewals by various Federal Agencies including the National Research Council and the Division of Biology and Medicine. He spoke of the different techniques used by the different agencies in first evaluating research proposals, and reevaluating the ongoing research relative to renewal of continued support.

Dr. Shilling asked the advice and counsel of the Committee on what is the best way to do an honest job, of evaluating the proposals - the very serious problem of how do we evaluate.

The question we are asking "is what we are doing now satisfactory - or how should it be done?"

Dr. Failla said that the program was set up initially to get people to work in the atomic energy field. Now we are coming to the point where there are no funds for new contracts. The question is, what are you going to do? "Are you going to stop making new contracts, or are you going to eliminate some of the old ones, and on what basis?"

Dr. Dunham stated that he believed the matter of no funds for new contracts is a temporary situation. Nevertheless, it was his opinion, and he felt strongly about it, that a good look should be taken at what sort of thing is being supported from here on out, and how much of a general Science Foundation activity we should continue, as

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opposed to concentrating our efforts more and more within the area of direct and close by related to direct interest, such, for instance as physiology of bone.

Dr. Burnett suggested that it might be of value to the Commission to employ several consultants to assist in evaluating proposals - as to whether after three years or so anything has been accomplished, and if it has not, then this is the time to cut them off.

Dr. Doisy inquired whether "it would be feasible to call on the consultants or get people who are suitably trained for a particular project to look over these projects that have been running three to seven or eight years - to see if there is anything productive coming out?"

Dr. Glass concurred with Dr. Doisy's views, however, he said that he doubted whether the present list of consultants is adequate for the purpose. He suggested that small panels or committees be set up like the Navy and the National Science Foundation uses to assist in the evaluation of research proposals.

Dr. Warren pointed out that in the early days of the Division and the program, "we shied away from the panel system as we tried to build a program that was not necessarily the best possible program as far as basic science as concerned, but a sound program applicable to the various sorts of problems that faced the AEC."

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Dr. Cantril inquired whether it would be advantageous for either a member of the staff or outside consultants to visit the project or laboratory more often, rather than evaluating the program from a paper or written report.

Dr. Shilling gave an unqualified yes to this question - "we should make more visits."

Mr. Brown interjected at this point to say that with the number of staff that we have, we have approached the limits of our physical ability of getting more travel. The other fact is that we are the smallest Division in the Commission, and we have the largest travel budget. We have a travel budget of \$88,000. "It seems to me we are almost impelled to rely increasingly on consultants unless we get a substantial increase in staff and travel funds."

Dr. Dunham remarked that we have one other source of expert advice which does not appear on the consultant list. That is the leading scientists in our National Laboratories. We draw fairly heavily upon these people, asking them to review proposals, etc.

Dr. Glass emphasized that the helpful thing that you get by sending proposals to a panel rather than to an individual is a little more of an overall judgment.

Dr. Glass stated further that he did not mean to imply that the research committee of the Division as it operates should be replaced.

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"I think it performs an exceedingly valuable function." "I thought that perhaps one step in the evaluation of proposals by a panel before it comes to the research committee might be helpful."

Dr. Bugher commented that "when you think of a panel having knowledge of the program, the knowledge of the diverse fields, and the intimacy of association to constitute a final body of review with respect to priority and relative merits, the staff of the Division is that panel."

Dr. Shilling replied - "that is correct."

Dr. Dunham suggested and the Chairman agreed that the question of what are the criteria for evaluating research proposals, individuals, universities, etc. be presented to the Committee for their consideration at the next meeting.

Dr. Failla thought that it would be highly desirable to initiate some scientific programs in foreign countries which would not require a long time to set up, and which would not cost very much money, but would reach a lot of the scientists in these different countries and would develop good will for this country.

A full discussion ensued.

The Committee was gratified to learn that through the new Division of Foreign Affairs and the International Cooperation Agency there

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exist channels for aiding research in selected underdeveloped countries as a part of the Atoms for Peace Program as a means of cultivating throughout the world research potential in the biomedical fields of atomic energy.

It appeared to the Committee that a beginning could be made in those countries where the scientific skills are actually present and where training opportunities offered in the United States have been taken advantage of, but where for one reason or another adequate equipment for even a moderate-scale research effort with radioactive materials is lacking.

Dr. Glass indicated that he thought the Division should explore ways of stimulating work in institutions in the United States by small grants of equipment.

In this connection, Mr. Brown stated that the Office of the General Counsel had said that we could make grants, even though the word, "grant" does not appear in the Atomic Energy Act - and is not a limiting feature.

Dr. Doisy said that he would like to see such action taken by the Division of Biology and Medicine.

Mr. Tammare reported that there was in process a staff paper that would accomplish this purpose. The present paper concerns itself

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with broadening the base with respect to engineers and that he could not see why the Division of Biology and Medicine could not be included.

Policy on Advisory Mr. Berman opened the discussion by reading
Committees into the record a letter from Judge Barnes, Assistant Attorney General in charge of the Antitrust Division, Department of Justice, to Congressman Celler regarding precautionary standards to guide advisory boards, so as to minimize the possibility of violation of antitrust laws.

Note: See copy of letter - Addendum B

Dr. Warren spoke of the general history of the ACBM when the AEC was first formed by saying that the "Chairman of AEC asked a group of scientists in whom he had confidence to constitute a Board of Review to see what had been done in the field under the Manhattan Project, and to review what the current medical problems of the Commission were, and to recommend the moves to be made to establish principles for both the care of Commission and contractor employees, and to guide research in the field. This Board of Review issued a report which was well and carefully thought out."

"Their recommendation was that there should be two somewhat distinct groups dealing with these problems of medicine and biology related subjects; one, an operating Division of Biology and Medicine, and

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two, an Advisory Committee for Biology and Medicine, that reported directly to the AEC rather than to the Division of Biology and Medicine. For that reason the Committee was set up with its own Chairman."

"At that time there was not concern to so great an extent with antitrust provisions or conflicts of interest, but rather to getting an essential job done. I assume while the General Counsel's Office must have considered these points in setting up of the Committee, I am not at all sure that they had considered them in the light of these recent things that you have called to our attention."

Dr. Warren continued by reading the important paragraphs of the report of the Medical Board of Review.

He brought to the attention of the Committee a letter from Chairman Lilienthal, dated August 7, 1947, appointing the members of the Committee in which the following paragraph was incorporated:

3rd paragraph - 3rd page

"In order that the Commission can implement and go forward with their recommendations, the next step must be to have the Advisory Committee for Biology and Medicine become operative. We propose that this Committee be of a stature comparable to our General Advisory Committee (a nine-man Committee provided in the Atomic Energy Act of 1946 and appointed by the President from Civilian life) and that it will function as a largely independent body and, in addition to reviewing Commission programs, makes policy recommendations on its own initiative. The organization of the General Advisory Committee into working sub-committees and the scheduling of its meetings are determined by the Committee itself. *****"

Sincerely
(signed)
David E. Lilienthal
Chairman

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Dr. Warren continued by saying, "I think this is a very important thing in relation to what has been said in the letter from the Attorney General's Office." He stated further, that the tradition from the start has been that the ACBM is an independent and policy recommending type of body.

Dr. Dunham stated that "as the present Director of the Division he seconded everything Dr. Warren has said. I would personally feel extremely embarrassed if I were put in the chair for this group which is called together by the Commission to advise the Commission as a whole on matters concerning biology and medicine. I do not think it would be appropriate."

During the full discussion Dr. Failla pointed out that "this thing goes farther than this Committee, really, because in a way it does away with these advisory committees or the value of these advisory committees in any field. I think it is a very serious matter that should be brought to the attention of those who are discussing this matter.

Dr. Tammare brought out that the AEC is trying to obtain a statutory status for the ACBM. He said that he would do everything in his power to assist in making the ACBM a statutory Committee and if this is accomplished in all probability the question of the violation of antitrust laws would not be forthcoming.

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Radioisotope Research
Program

Mr. McGarry opened his remarks by giving a
brief history of the isotope research support

program from its inception in 1948 to the present year. He stated that in March 1955 the Commission approved a proposal to expand the program to include all biomedical research. Biomedical research was defined as medical research, research in diagnosis and therapy, research in biology and research in agriculture.

Mr. McGarry presented a comparative cost statement depicting the cost of the program for the first four months of the last fiscal year when the isotopes were used exclusively for cancer research and therapy and for the first four months of this fiscal year under the new program.

He said that the new program was growing steadily but slowly. There are now 230 medical projects under the program (some, of course, are cancer carry overs). What is more significant is that there are 88 biological and agricultural projects.

The question of getting the new program moving faster - was considered. Dr. Dunham said that one or two applications for isotopes had been received requesting that the subsidy be granted these users when the isotopes were to be used strictly in training courses. He believed that this could be done - but the question is - whether it really is worthwhile.

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Mr. McGarry enlarged on Dr. Dunham's statement by saying that if this course is approved that there would be considerable administrative expense involved in relation to the dollar value of the isotopes used. He urged that, should approval be granted the framework of the program be clearly defined.

Dr. Failla pointed out that the transportation charges are larger than the cost of the isotopes. He stated further that AEC facilities might be able to provide small amounts for training purposes, and that he understood that the NYOO provided small amounts to high schools.

Dr. Bugher said that Commissioner Libby would be enthusiastic for a plan to supply these small amounts of training isotopes for high schools without cost.

Mr. McGarry thought that one of the problems that would be associated with this plan would be of getting the word passed around that the isotopes could be made available for high school training. The slow growth of the new program would seem to indicate that knowledge of its existence is not as widespread as it should be.

Dr. Glass did not think this would be too difficult a problem to have the information circulated around to high schools. He suggested that notices regarding the availability of isotopes for training purposes, with instructions as to how to make application for them

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be placed in the Journal of the National Association of Biology Teachers and the AIBS bulletin and four or five other places, and by so doing, the science teachers would soon have an opportunity to learn of the program.

Dr. Dunham summed up the feeling of the Committee on this matter by saying "I take it that the general feeling of the Committee is that this would not properly be a program that would be logically an extension of our present isotope subsidy program, and if the Commission goes all out, as they may, in aiding and abetting secondary school education and college education in these fields, it would be more properly a part of that."

The Committee agreed with Dr. Dunham's summary of the matter.

In connection with this discussion, Dr. Bugher told of a proposal that had been received by the Rockefeller Foundation from Dr. Hellander of the ORNL in behalf of the State University of Florida for the establishment of a small laboratory for training students on radiobiology techniques, methods of experimentation - not research itself.

Dr. Bugher thought the proposal in the first instance should be considered by the Division of Biology and Medicine.

The Committee felt that this is a matter that could rightly come under the staff paper that is being prepared as indicated by Mr. Tammare in connection with giving small grants to institutions in the United States for purchase of equipment.

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Therefore, after a full discussion and in connection with the broader program, the Committee recommended "the extension of -AEC activities into the field of development and training even at the secondary school level."

Training of Residents in
Isotope Techniques

Dr. Dunham said he would like the Committee to discuss a specific request of Dr. Libby.

The question is, is the present training available in radioisotope techniques to medical residents under approved AMA residency programs adequate or do they need to be expanded?

The Committee felt that under the present momentum the program will work out, that residents can receive training if they so desire it.

Dr. Warren thought that probably the problem could be looked into by a group like the Council on Medical Education of the AMA who are in this business all the time and have inspectors and people all around the country. There is no question that certain areas are covered, but there may be large holes, also.

Dr. Dunham replied that he would be happy to explore with the Council on Education.

Dr. Cantril said that The American College of Radiology and the North American Radiological Society are interested in this matter. Also, he mentioned that there is a symposium on the training of residents in isotope techniques being held in Chicago on December 11.

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Status Report of McKinsey
Management Report

Mr. Brown gave an interesting summary of the McKinsey Management Report which is a report of a management consultant firm that was retained by the Commission to study and assess the adaptability of the AEC organization and its administrative attitude toward the peaceful uses of atomic energy. He stated that the report is fair in its treatment of the AEC and it offers suggestions for betterments throughout all of the Divisions including the National Laboratories. Mr. Brown referred again to the importance of the statutory recognition that has been suggested for the ACBM that the AEC plans to send to the Congress. In this connection he said that in the McKinsey Report, they identify what they consider to be the sources of direction and policy making in the Commission. They list the laboratories, on site and off site, the program divisions, the Office of the General Manager and the General Advisory Committee. The ACBM is not mentioned in this particular location. "I think it is very significant. I think this is more evidence of the need to take the action that was suggested a while ago."

Research Proposals Dr. Shilling asked the following question of the Committee regarding the data supplied to them on the Report on "On and Off Site Research Contract Proposals."

"Do you like the report as it is presented or do you think it would be as effective with the comments left off?"

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It was the opinion of the Committee that the report is more effective and more informative with the comments on it as made by the staff of the Division. Dr. Dunham brought to the attention of the Committee that the report as prepared with the comments should be held in confidence.

Status Report
Rockefeller Endow-
NSA - Joint Study on
Radiation

Dr. Bugher outlined the background of the Committee formed by the Rockefeller Foundation - National Academy of Sciences to make a joint study on radiation effects.

He stated that the plan had the approval of President Eisenhower and Mr. Dulles as well as Chairman Strauss. It was proposed that there would be eight panels. The first panel on genetics met at Princeton around the middle of November, the second panel, on pathological studies, which Dr. Warren will chair plans to meet during December. The other panels, the panel on problems of waste disposal has not been established and no meeting has been scheduled. The meteorology aspects of dispersal is in a planning stage and no meetings have been scheduled. The four other panels which are still quite nebulous, include the effects of atomic radiation on food supplies, oceanographic aspects on dispersal, and contamination problems, meteorology, the effects on culture and urban patterns, economic, cultural and and general reorganizations of urban patterns, and lastly, the effects on the flora and fauna, and on the balance of organic life.

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Dr. Bugher stated that British Royal Society have taken similar action.

In this connection Dr. Failla stated that at the Genetics meeting in Princeton that he tried to get the geneticists to agree tentatively at least, on the permissible value for the whole population.

The problem is under study and is to be considered by the panel at the February meeting.

Dr. Failla also brought up the problem of safety regulations. He said that there is a problem concerning the NCRP recommendation regarding permissible levels of radiation for controlled areas and uncontrolled areas, permissible limits for occupational exposure, and non-occupational exposure. The limits set for non-occupational exposure are ten percent of the others.

The Committee is keenly interested in this problem and will follow it carefully.

Executive Session Dr. Warren reported on the activities of the Executive Committee of the National Research Council which he attended and wherein the problems of the ABCC were discussed.

Note: In this connection the recommendations of the ACBM are reported under the discussion of the ABCC Program. Page - 17

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Nominees for At the meeting held in September, 1955, it had been
Membership
ACBM suggested that Dr. Glass bring in some names of nominees

- for the consideration of the Committee for replacement of Dr. Deisy upon his retirement. (Dr. Deisy's term of service will end on June 30, 1956). He presented the names of three persons for the consideration of the Committee, namely:

Dr. E. B. Fred, President, University of Wisconsin
Dr. Jay L. Lush, Iowa State College
Dr. E. C. Stakman, University of Minnesota

Action on recommending a nominee to replace Dr. Deisy was held in abeyance until a subsequent meeting.

Minutes of Meeting The Minutes of the 52nd meeting of the ACBM,
held at the AEC
September 9 & 10, 1955 held at the AEC on September 9 and 10, 1955
were presented for consideration. Dr. Deisy moved the approval of the Minutes, Dr. Cantril seconded the motion, and the Minutes were approved unanimously.

Next Meeting The fifty-fourth meeting of the ACBM is scheduled to be held at the New York Operations Office on Friday, January 13, 1956 and at the Radiological Research Laboratory, Columbia University on Saturday, January 14, 1956.

Federal Civil Defense Mr. Gorsbic emphasized again the problems
Administration that are confronting the Federal Civil Defense
Administration.

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As to the apparent inability of FCDA properly to digest and utilize the several hundred classified reports which have been transmitted — to them by the AEC, the Committee restated the position it has always held that the AEC is obliged to do all in its power to help civil defense matters, recognizing, of course, that this effort may require going beyond AEC's responsibility to FCDA as defined by law but clearly required in the interest of the nation in the present situation. The Committee feels that AEC would be severely criticized were it not to continue to do so and on an expanded scale. The Committee recognized that the Division of Biology and Medicine staff as presently constituted, and in view of its many other priority responsibilities, cannot sustain the volume of effort which we envisage is required and recommends to the Commission that the importance of this matter be recognized by the Commission and that such steps be taken as may be necessary to provide additional staff for this purpose.

Adjournment The meeting adjourned on Friday evening, December 2, 1955
at 5:15 P.M.