MINUTES

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ADVISORY COMMITTEE FOR BIOLOGY AND MEDICINE

September 9 and 10, 1955

The fifty-second meeting of the Advisory Committee for Biology and Medicine was held at the Atomic Energy Commission in Washington, D. C., Friday and Saturday, September 9 and 10, 1955, with the following persons in attendance.

ATTENDANCE

Member of ACBM	Dr. Gioacchino Failla, Chairman
	Dr. Shields Warren, Vice Chairman
	Dr. Charles H. Burnett
	Dr. Simeon T. Cantril
	Dr. Edward A. Doisy
	Dr. H. Bentley Glass
Staff of Division of Biology and Medicine	Dr. John C. Bugher, Director
	Dr. Charles L. Dunham
	Dr. Charles W. Shilling
	Dr. Paul B. Pearson
	Dr. Willis R. Boss
	Dr. Nathan S. Hall
	Dr. John Wolfe
	Dr. Roy S. Albert
	Dr. Paul LeFevre
	Dr. Walter D. Claus (Friday only)
	Dr. Gordon M. Dunning
	Dr. Forrest Western
	Dr. Robert L. Corsbie
	Mr. Robert L. Butenhoff
	Mr. Howard C. Brown, Jr.
	Mr. Herbert A. Stanwood, Jr.
	Mr. Ward Miller, Jr. (Friday only)
	Mr. James F. Haggerty
	Mr. L. Joe Deal (Friday only)
	Mr. Merril Eisenbud (Friday only)
	Mrs. Frances R. Montgomery, Secretary
University of California (Berkeley)	Dr. Hardin Jones
Staff of AEC	Dr. John von Neumann, Commissioner (Friday only)
	Mr. A. Tammaro (Saturday only)

Friday, September 9, 1955

9:00 A.M.

The Advisory Committee for Biology and Medicine concerned itself on Friday morning with studying research proposals, reviewing staff papers and material relating to the biological and medical program of the Division of Biology and Medicine.

1:30 P.M.

The Chairman convened the meeting on Friday afternoon at 1:30 P.M. with all members present.

Dr. Failla asked Dr. Bugher to present Dr. H. Bentley Glass of Johns Hopkins University who had been asked to serve as a member of the Committee, to replace Dr. Curt Stern whose term of office had expired in June, 1955. Dr. Bugher stated that Dr. Glass is well known to all geneticists throughout the United States and other countries and that the consistent interest and concern shown on the part of the Advisory Committee has been reflected in the fact that an outstanding geneticist has always been a member of the Advisory Committee since its inception.

Dr. Bugher then introduced Dr. Shilling who had joined the Division in July, as Special Assistant to the Director. He noted that Dr. Shilling had years of experience in the organization of the biomedical activities of the Office of Naval Research and that his association with the Bureau of Medicine and Surgery had given him an extensive background of research and of research administration. The Committee expressed great satisfaction at this fortunate addition to the staff.

Dr. Bugher told of the changes that had occurred in the Biology Branch. Dr. John Wolfe of Ohio State University who has been teaching courses in plant ecology has joined the Branch to further the program in ecology.

Dr. Sterling Emerson from the California Institute of Technology has taken over the genetics program, replacing Dr. Earl Green who has returned to Ohio State University to resume his duties in teaching genetics.

Genetics Program - Dr. Pearson reviewed the discussions by the Committee at the meeting held in Oak Ridge in May 1955 when they had given consideration to expanding the genetics program particularly as related to population genetics. It was suggested at that time that an Ad Hoc Committee be appointed to study the program and to report to the Director of the Division as to what phases of the program should be expanded.

Dr. Pearson reported that an outstanding group of geneticists had been appointed to make this survey and that they will assemble the latter part of October at the Atomic Energy Commission in Washington, D. C. The Committee consists of:

Dr. H. Bentley Glass - Johns Hopkins University
Dr. Curt Stern - University of California (Berkeley)
Dr. George Beadle - California Institute of Technology
Dr. Earl Green - Ohio State University
Dr. James Neel - University of Michigan
Dr. W. L. Russell - Oak Ridge National Laboratory

It was pointed out that on the initiative of the United Kingdom a genetics conference is to be held at Harwell on September 19 and 20, 1955, which will be attended not only by representatives from Canada, the United Kingdom and the United States, but also from one or two other countries, probably Sweden and Norway.

One of the objectives of this conference is to see just what segments of the genetics program may be carried on by the U. K. and other countries, and then what segments might be carried on in this country.

Atomic Bomb Casualty Commission

Dr. Bugher oriented the Committee on the recent activities of the Atomic Bomb Casualty Commission. He said that the program was receiving more international attention than had been the case in the past. In Geneva, at the International Conference on Peacetime Uses of Atomic Energy it was mentioned by various people, particularly in regard to the Atomic Bomb Casualty Commission genetics studies.

The Chairman inquired, "what has happened to the plan for a medical reactor program for Japan"? Dr. Bugher replied that he had asked the Rockefeller Foundation in Japan to make a study of medical education from the standpoint of possibilities of increasing support for the medical school at Hiroshima. The Foundation came to the conclusion that the support to medical schools should be in Tokyo where the two outstanding schools are located. Also, the Japanese Science Council expressed enthusiasm over building up the Hiroshima Medical College--of building a center for medical education and research and of amalgamating various facilities of the school with facilities of the ABCC.

Dr. Bugher explained further that another factor in this rather complicated picture is the interest by the Episcopal Church in possibly making a gift of a reactor to Saint Lukes Hospital in Japan. Dr. Failla propounded the questions of "How does the medical profession feel about this situation in Japan? Are they in favor of having the reactor at Hiroshima or Tokyo?" A report on the subject matter will be made at a later date.

Radiological Thesis - Dr. Hardin Jones, of the Donner Laboratory, University of California presented a thesis on the radiation problem as it may affect populations. He maintains that the aging process in humans may be accelerated generally in proportion to the disease incidence experienced

in early life; and that if radiation is superimposed on the nominal aging factors, a statistical shortening of life span can be expected in proportion to the radiation levels to which a population has been exposed. The thesis is based in part on a status report on the follow-up of the survivors of the A-bomb in Japan.

A copy of Dr. Jones' report may be found in the files of the Division of Biology and Medicine.

Sea Disposal Atomic Wastes — The Committee discussed briefly the subject of sea disposal of atomic wastes. They considered the question of whether support should be given such studies as outlined by Dr. Claus, but hoped that funds advanced for this purpose would not be taken from research. It was brought out during the discussion that in view of the vastness and the increasing importance of the problem, that it may be desirable for the Commission to make a study of the problem. Dr. Cantril inquired whether there could not be some international program of research worked out which would be cooperative and eventually end in some international agreement since the ocean is an international body of water. It was concluded that a fair-sized program should be initiated in the near future--if funds can be made available.

Wigwam — Dr. Boss reported to the Committee on the Fish Monitoring Program, necessitated by Operation Wigwam. Dr. Doisy suggested that the complete report of the activities of the program be placed in the record. It reads as follows:

WIGWAM FISH MONITORING PROGRAM

Prior to the underwater test detonation (Operation Wigwam) of a small fission weapon in the eastern Pacific this past spring (May 1955) the Division of Biology and Medicine was directed to establish a fish monitoring system on the west coast. The basic reasons for activating the program were twofold, (a) to establish beyond a doubt that no commerically caught fish in the eastern Pacific, landed at west coast ports, were contaminated by dangerous amounts of radioactive fission products, and (b) to reassure the public and the twenty-two fish canners in the event of any adverse, sensational publicity, that the fish were not contaminated. The Federal Food and Drug Administration was requested to cooperate in establishing the program in view of their mass-testing tuna program following the H-bomb test in 1954, existing public confidence in the agency, and their specific responsibility of guaranteeing that all fish and fish products landed at west coast ports were free of all contamination.

Thirty-two personnel were assigned to the operation.

(a) Food and Drug assigned the Los Angeles and San Francisco Districts Chiefs and five food inspectors.

(b) The Armed Forces Special Weapons Project furnished eighteen enlisted men and two officers from the 1st Radiological Safety Support Unit. The men were sworn in by Food and Drug as deputy food inspectors, and worked in white coveralls. All had appropriate clearances.

(c) The UCLA-AEC Project assigned three scientists from their Health Physics Branch and personnel to train the enlisted men, and officers, and five Food and Drug inspectors.

(d) The Division of Biology and Medicine assigned one man from the Instruments Branch and one from the Biology Branch.

Automatic rate meters, Nuclear Instrument 1619, Esterline-Angus recorders, and alarm systems (MR-14) were installed in specially constructed moisture controlled boxes at the large canneries at Terminal Island and San Diego. The boxes were built and the instruments assembled by and at the UCLA-AEC Project. Twelve unloading lines were monitored by AEC automatic instruments, and ten lines by instruments owned by the cannery at seven of the largest canneries. AEC personnel assisted the canners in modernizing and calibrating their instruments.

Twenty-nine portable GM meters for hand monitoring at the smaller canneries were borrowed from the California State Civil Defense Organization by the UCLA-AEC Project. The biophysics branch at UCLA assumed the responsibility for the operation, maintenance and repair of the hand and automatic instruments.

The alarms of the automatic instruments were set at 2X background (0.1 mr/hr. or 500 c/p/m.), namely .02 mr/hr (1100 e/p/m) for a 6-inch wide fish. The monitoring was started at all plants on May 12, 1955.

Hand monitoring by the deputy Food and Drug inspectors was discontinued on July 7, 1955, and the AEC automatic counting units were removed from large plants on August 3, 1955. The automatic counting units have been overhauled and stored at the UCLA-AEC Project for future emergencies on the west coast.

From May 12 to August 3, 1955, a total of over 49 million pounds of fish and fish products were monitored as shown by the following table.

Variety	Terminal Island	San Diego	Monterey	Total
Anchovies	209,500	-	-	209,500
Mackerel	2,193,500	11,000	-	2,204,500
Shark Livers	84,500	-	-	84,500
Shark Fins	15,000	-	-	15,000
Tuna (pre-blast)	16,850,000	10,402,000	-	27,252,000
Tuna (post-blast)	16,691,000	2,713,000	344,000	19,748,000

(All figures are in pounds)

Total Tuna Monitored	47,001,000
Other Fish Monitored	2,513,500
Total Fish Monitored	49,514,500 pounds

No radioactivity was detected in fish caught in the Wigwam area or eastern Pacific.

Three special problems occurred during the monitoring program.

(a) On June 13 the South Coast Cannery unloaded a shipment of 377 (12,580 lbs.) frozen yellow fin tuna imported from Yokohama, Japan, via San Francisco. The automatic counting instruments detected radioactivity in four fish of the total shipment. One of the four exhibited readings greater than 0.10 mr/hr at four inches from all body surfaces. Inside the oral cavity readings of 0.2 to 0.5 mr/hr were recorded. The four fish were impounded and the remainder of the shipment was released

and canned. The 58-lb. fish with the highest reading was sent to the UCLA-AEC Project and to the Analytical Branch of the New York Health and Safety Laboratory for radiochemical analysis. A separate report will be made upon completion of the radiochemical analysis.

(b) On June 8, the California Department of Fish and Game Research vessel, M. B. Schofield, landed at San Pedro. The ship had caught approximately a ton of fish in the Wigwam test area after the detonation. The crew and fishery biologists had eaten some of the fish and were extremely apprehensive they had consumed some radioactive contaminated fish. A team of Food and Drug inspectors monitored the cargo and ship. No radioactivity was detected.

(c) During the first week of the operation the alarms on the automatic instruments were tripped at two plants in San Diego and one at Terminal Island. The fish unloading lines were shut down until the fish were monitored by hand and ascertained to be negative. A survey determined that a commercial shipyard repair firm was using a 3000 millicurie source of Cesium to check the finished welds on vessels. When the source was transferred to smaller pigs and carried from the panel truck to the weld the resulting radioactivity was sufficient to trip the alarms, when the source was 75 yards or closer to the automatic counters. Readings near the truck were 20 mr/hr. Arrangements were made to correlate their operations with the fish unloading activities.

No extreme adverse publicity resulted from the monitoring program and in general the west coast tuna canners and public accepted the criteria that the operation was a routine Food and Drug - AEC activity.

Norpac A brief outline of the activities of Norpac was presented by Dr. Boss. He stated that there are three countries involved in this international sampling of the Northern Pacific and that at a later date a full report on Norpac will be given to the Committee.

Redwing Mr. Eisenbud made a few remarks concerning Operation Redwing. He spoke of the monitoring program and of the basic differences in the approach to the problem from that used in the Castle series.

Adjournment The meeting adjourned at 5:00 P.M. and the Chairman stated that the Committee will reconvene on Saturday morning at 9:00 A.M.

Saturday, September 10, 1955

Civil Effects at Nevada Test Site The Chairman opened the second day of the meeting by calling on Mr. Corsbie to review the civil effects participation in the TEAPOT series conducted in the spring of 1955. Mr. Corsbie described the current efforts to keep the Federal Civil Defense Administration informed on atomic developments pertinent to their responsibilities.

He stated that the AEC had invested $660,000 in the structural program and that the FCDA had invested $375,000. Mr. Corsbie pointed out that of the $375,000 industry had contributed $300,000. This was the first test in which industry was permitted to furnish funds that could be applied for structures to be erected and tested at the test site.

Mr. Corsbie said that a large effort has been made to expedite the placing of information gleaned from the test series into the hands of FCDA authorities and others who would need it. He mentioned one report prepared by L. V. Vortman, entitled, "Shelters for Civil Populations." This report is not classified, however, the author had listed 37 references to weapons test reports covering above-ground construction, 35 are either classified Confidential or Secret-Restricted Data; of the 14 references to the below-ground structures, 13 are classified Confidential or Secret-Restricted Data; and of the earth structures, all 5 are classified.

The Committee was informed that there are 48 documents prepared from recent test activities which concern civilian medical and biological subjects but which remain classified; 7 are from GREENHOUSE; 2 from RANGER; 6 from BUSTER-JANGLE; 2 from TUMBLER-SNAPPER; 1 from IVY; 15 from UPSHOP-KNOTHOLE; 3 from CASTLE; 1 from WIGWAM; 9 from TEAPOT and 2 from SANDSTONE.

A full deliberation was held on the problem and it was suggested to the Director of the Division of Biology and Medicine that it might be well to formulate some method whereby documents could be made available in unclassified form and that some method be found whereby important information can be made available to either the FCDA or the public in a usuable manner.

The Committee is cognizant of the fact that there is not any particular unit in the Commission that has the continuous responsibility for the review of classified documents with a view to initiating declassification. Therefore, in this connection, the Committee unanimously approved the following recommendation:

(a) "That declassifiable information be separated from the rest and deposited in a form that would be available to the public;

(b) "That some means be found for extracting from the backlog the material of general interest which needs to be summarized and interpreted."

Current Activities of the Division — Dr. Bugher opened his remarks by giving the high lights of the Geneva Conference. He spoke of the outstanding contributions made by Dr. Paul G. LeFevre of the Division of Biology and Medicine,

who assisted Dr. Paul McDaniel of the Research Division in the organization and planning with specific reference to the selection of the scientific papers to be presented to the Conference. Of the 1110 papers presented to the Conference by all the participating countries, either orally or for inclusion in the published proceedings, approximately one half were submitted by the United States.

He said that Mr. Butenhoff undertook the formulation of the scientific exhibit. It was an outstanding piece of work and many favorable comments had been expressed over the exhibit.

Mr. Brown followed by discussing the Atomic Energy Act of 1954, noting an intent to permit and encourage industry to play a greater role in the development of atomic energy. He told of activities of the Division of Civilian Application and of the establishment of the Division of Inspection. He pointed out that in the General Manager's Office there had been developed a reactor hazards evaluation staff for the purpose of relieving the reactor safeguards committee of some administrative burdens.

Mr. Stanwood was called upon to give a short budgetary review. He said that for the fiscal year, 1955, that the Division had a budget of $27,000,000, and of that amount $26,800,000 had been expended. In 1956, the current fiscal year, Congress appropriated $27,000,000 which was the amount requested. However, due to the administration of the radioisotopes research program, plus a number of other items, it has been necessary to increase the request of the Division by $500,000.

Mr. Stanwood added further, that in 1957, due to our expanding program, it is anticipated that a request will be submitted for $30,500,000.

Foreign Doctors Tour — Dr. Dunham described the first of the tours for Foreign Doctors to visit AEC installations and certain biological and medical laboratories in the United States for the purpose of studying the peaceful uses of atomic energy. The tour was under the jurisdiction of the State Department and the American Council of Education and in cooperation with the AEC.

Mr. Tammaro briefly outlined the activities of the Division of International Affairs.

The Committee was gratified to learn from Mr. Tammaro that the Commission was lending every effort to arouse interest in the atomic energy program among promising young scientists.

He mentioned that the Russian scientific training curve is going up and that from all reports, it looks like Russia will be producing 50,000 scientists and engineers a year while the United States appears to be dropping from 52,000 to 37,000 per year.

Gabriel-Sunshine — Dr. Western reviewed the progress on the Gabriel-Sunshine program. He stated that there has been increased interest in the possible biological effects of fallout, particularly from near-surface bursts of high yield weapons. Which aspect of such fallout would be critical may depend to a large degree on defense measures employed.

While there has been little investigation of specific defense measures which might be feasible, it appears reasonable to assume that the hazards from any one aspect of radioactive fallout could be greatly reduced by appropriate defensive action. Strontium^{90} is still considered to be the most probable critical factor.

Dr. Western brought out that there are many unanswered questions related to hazards from strontium^{90}. He said that the distribution of strontium^{90} in local fallout and the stratosphere are poorly known. Also poorly known are the actual concentrations of strontium ^{90} in the human skeleton necessary to produce various biological effects. A program to obtain better biological data in large mammals, using dogs, is being initiated.

The Sunshine program of assaying the occurrence of strontium^{90} in the biosphere has progressed sufficiently to permit a semi-quantitative estimate of the ratio between the fallout of strontium^{90} and the occurrence of strontium^{90} in the skeletons of persons living in areas of general fallout. This ratio is based on direct observation of concentrations in soil and bone samples in a particular geographical area, and might vary considerably with variation in such conditions as dietary habits, soil characteristics, design and use of weapons, and protective measures.

Dr. Western states further that the highest percentages of strontium^{90} observed in human bones in the United States are of the order of one-thousandth the maximum permissible value for occupational exposure to strontium^{90} currently recommended by the International Commission on Radiological Protection and by the United States National Committee on Radiation Protection.

Geneva Conference
Atoms for Peace

Dr. Bugher expanded his previous remarks regarding the activities of the Geneva Conference. It was his belief that the conference from the very beginning to the final general session was an outstanding success. He noted that no political notes or views were injected.

Every effort was made to make it underscore science and to subdue politics. Dr. LeFevre summarized the work in Dr. McDaniel's office which was concerned with the technical papers program and the handling of the operations in Geneva.

Mr. Butenhoff explained the various facets of the official United States exhibit. He said that a total of 36,200 persons viewed the exhibit in a two week period and in some cases there were close to 1000 persons per hour seeking admission.

Mr. Butenhoff brought out that the exhibit of fuel elements received a great deal of attention from other countries because this is really the first time that the AEC has even broken down the classification barriers and shown fuel elements as they are used.

Dr. Warren commented briefly with respect to the Russian medical exhibit. Two things in particular were stressed, (1) the use of isotopes, P-32 were being used, where in the United States, X-ray is used for superficial lesions such as angiomas, skin cancer, etc; (2) the Russians have gone into the cobalt program rather extensively at an early date.

The Chairman remarked that at a gathering where there were Russians present, he had occasion to ask one of them when they had the first Pile in operation and that the immediate reply was 1945. Then the gentlemen from Russia volunteered the information that in 1947 they had their first atomic bomb.

Dr. Failla did not know whether this was a true statement, however, he stated that other information indicates that in 1949 they were using radioisotopes extensively in research.

Dr. Failla continued by saying that in his opinion "the United States made a very good showing in Geneva as far as exhibits and papers and organization are concerned, and that the staff of the AEC really did a magnificant job. It was a tremendous task in the short time that was available and I really was proud of the showing made."

He spoke of the change in policy that had occurred in Russia recently and of his discussion with a Russian scientist regarding it. Also, he said that the cold war now is not going to be so much in regard to military power or at least in regard to the nuclear weapons race but more in technological advances.

Dr. Failla brought out that the Russians think that by making technological advances and appearing to be very peace-loving they can isolate us from the rest of the world; and therefore, they can gain their ultimate aim, which is peace on their own terms.

International Atomic Energy Agency — Dr. Bugher stated that the International Atomic Energy Agency is now in motion as originally planned by the United Nations

Resolution. This agency will be a center for international cooperation and would assist in the arrangements for distribution of fissionable materials for research reactors.

Research Program Dr. Shilling led the discussion on the Research Program. He said that it is his purpose to analyze the on-site Research Program to see what coverage there is by way of areas of interest and needs of the atomic energy program. Also, that he wished to try to intergrate the on-site program more thoroughly with the off-site program. Furthermore, that both the on-site and off-site programs should be reviewed most carefully in case of a cutback became necessary in order to have sufficient funds to allocate the new research projects. Dr. Burnett expressed concern over the overhead problem. In this connection, Dr. Shilling mentioned the paper submitted by the Director, National Science Foundation to the Director, Bureau of the Budget, entitled, "Recommendations for a Uniform Policy for paying the Indirect costs of Research Supported by the Federal Government at Universities and Colleges." The Committee requested that a copy of the paper be sent to them for their persual. A full discussion ensued.

The Chairman said that in view of the importance of learning of the current trends in the biological and medical research program and to discuss the recommendations of the National Science Foundation concerning costs of support by the Federal Government, that it would be well to hold a three day meeting for the next session of the Committee and to devote one full day to these problems.

It was the sense of the Committee that it would be advantageous to hold the three day meeting as suggested by the Chairman.

Minutes of
51st Meeting
ORNL
May 5, 6 and 7, 1955 The Minutes of the 51st meeting of the ACBM held at the ORNL on May 5, 6 and 7, 1955 were presented for consideration. A few minor corrections were suggested.

Dr. Warren moved the approval of the Minutes, Dr, Doisy seconded the motion and the Minutes were approved unanimously.

Next Meeting The fifty-third meeting of the ACBM is scheduled to be held at the AEC in Washington, D.C., on Wednesday, November 30, 1955, Thursday and Friday, December 1 and 2, 1955.

The Committee proceeded into Executive Session at 3:05 P.M.

Executive Session The Committee considered names of nominees to fill the vacancy on the Committee membership. The Committee was aware of the outstanding service rendered by Dr. John C. Bugher to the nation and to the atomic energy program. They felt that they should continue to take advantage of Dr. Bugher's experience, ability and familiarity in the AEC biological and medical research program. Therefore, the Committee voted unanimously that a recommendation should be forwarded to the General Manager that Dr. Bugher be appointed a member of the Committee on the termination of his present appointment as Director of the Division of Biology and Medicine. The meeting adjourned at 5:00 P.M.