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MINUTES

ADVISORY COMMITTEE FOR BIOLOGY AND MEDICINE

TWELFTH MEETING

Held at

Hanford Operations Office

Richland, Washington

October 8-9, 1948

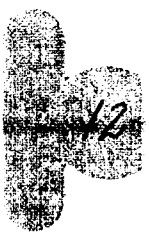
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MINUTES

Advisory Committee for Biology and Medicine

October 8-9, 1948

The twelfth meeting of the Advisory Committee for Biology and Medicine of the Atomic Energy Commission was convened by the Chairman, Dr. Alan Gregg, at 9:00 A.M. at the Hanford Operations Office, Richland, Washington, on October 9, 1948.

Members Present

Present at the meeting were Dr. Alan Gregg, Chairman, Dr. Ernest Goodpasture, Vice-Chairman, Drs. G. W. Beadle, D. W. Bronk, A. Baird Hastings, E. C. Stakman and Joseph T.

Staff Members Present

Wearn. Members of the staff of the Atomic Energy Commission who were present were Dr. Shields Warren, Dr. James H. Jensen, Mrs. Frances R. Montgomery, and Mr. David Low. Representatives of Hanford Operations Office attending: Mr. Roy C. Hageman, Chief, Operations Division, Mr. W. K. Crane, Dr. H. M. Parker, Manager, Health Instrument Divisions, Dr. H. A. Kornberg, Dr. C. C. Gamertsfelder, Dr. E. C. Berry, Mr. F. P. Seymour, Dr. W. D. Norwood, Manager, Medical Division, Dr. P. A. Fuqua, Dr. R. R. Sachs. Hanford Works Consultants attending: Dr. S. T. Cantril, Dr. M. E. Ensminger, Dr. R. E. Zirkle, Dr. L. R. Donaldson, Director, Applied Fisheries Laboratory, University of Washington, and Dr. Kenneth G. Scott, University of California.

Minutes of Meeting of Sept. 11, 1948

The first order of business presented to the Committee by the Chairman was a discussion of the minutes of the meeting held on September 11 at the Atomic Energy Commission in Washington, D. C. Dr. Gregg suggested that the following

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addition be included on Page 9 at the end of Line 8: "at Northwestern University, Chicago, Illinois," and that Dr. Warren's name be substituted for Dr. Gregg's name on Page 11, Line 4. Dr. Hastings made a motion that the minutes be accepted as corrected. The motion was seconded by Dr. Wearn and carried unanimously.

Special 200  
Area Pro-  
blems

Dr. Parker, Manager of the Health Instruments Division, sought the scientific and professional advice of the Committee regarding the problem emanating from active particles dissemination from the process stacks which was discovered about a year ago by routine survey men. Dr. Parker explained the situation in detail and stated that the first particles found on the ground were quite active according to present standards. The hottest was a three microcurie particle. The particles were carrier rust particles with a coating of active materials and it was found that they came from defective duct work in the system and rust was flaking off and falling within 2000 ft. of the stacks. This problem has been corrected by removing this particular duct work. Smaller particles were left which might actually be a biological hazard. The rust particles ranged up to a millimeter in diameter and the smallest found was 100th of the size. Dr. Parker presented the following data in explaining the seriousness of the problem.



[REDACTED]

Meteorology Tower

Height above ground	Particles inhaled per month			Time	Particles inhaled per month		Insd		Particles deposited in 200 Areas per mo.
	July	Aug.	Sept.		200 Area General	200 W Gatehse	Offs.	Insd Op.Gal.	
3	5	5	11	Jan.			-	-	$10^7$
50	6	3	12	Feb.			-	-	No record
100	10	4	15	Mar.			No	No	$5 \times 10^7$
150	14	7	26	Apr.		5	prior	prior	$8 \times 10^7$
200	13	8	35	May	5-10	7	data	data	$4 \times 10^8$
250	14	7	30	June	5-10	6	-	-	$10^9$
300	14	8	18	July	10-30	33	10-20	-	$4 \times 10^8$
350	8	4	20	Aug.	10-30	36	10-20	-	$3 \times 10^9$
400	6	5	32	Sep.	20-30*	29	10-20	80	$10^9$

Notes.

Data reported as for a particular month does not coincide with the exact exposure time, due to lag in radioautography and reporting. This does not affect the argument presented.

Particles inhaled per month are based on the number of particles in the amount of air inhaled by a man working 8 hours per day for 20 days per month in the plant areas. No allowance is made for rejection of large particles or for the exhalation of a fraction of the entering particles.

In residential areas, the inhalation figure is based on a 24-hour day and 30 day month.

\* There was one value of 70 here, not mentioned in the presentation.

[REDACTED]

Comment on Dr. Zirkle's figure for wandering  
of active particles.

(Order of magnitude calculations only)

1. A lung active particle at 10 microns gives 10 rep/day.
2. If the particle migrates back and forth over a line 100 microns long, the dose rate is 2.5 rep/day
3. If the particle wanders over a disc of diameter 100 microns, dose rate is 1 rep/day
4. If the particle migrates steadily at 100 microns per day in one direction, the average dose rate to a particular cell is 0.5 rep/day for the first five days, and thereafter rapidly becomes insignificant.

In summary, rather more mobility is required for absolute safety than was implied in the meeting.

After a thorough discussion by the Committee, the Director of the Division of Biology and Medicine, Dr. Parker and members of his staff and Dr. Raymond E. Zirkle, of the University of Chicago, it was the sense of the Committee "that there is no scientific evidence that it is an unwarranted hazard to continue the present process for six weeks, during which time steps will be taken vigorously to control the hazard."

If, on continued investigation after the installation of the protective measures, it is found that particles continue to be discharged in appreciable amount, a reappraisal of the problem would be necessary.

Health  
Instrumentation  
Program

Dr. Parker presented the Health Instrumentation Program, which is divided into three divisions, Operational, Development and Biology. The operational Division is further divided into two groups, survey and personnel monitoring, which occupies approximately 100 people. Its problems are to achieve steady

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improvement in the light of advancing knowledge of the art of radiation protection. The Operations Group, with the assistance of Dr. Kenneth Scott, of the University of California at Berkeley, developed the Bio-assay plutonium analysis of urine.

The Development Division studies problems in many fields of science including site surveys for the study of environmental hazards and determining the origin and nature of the particles discussed previously.

Dr. Parker discussed the waste disposal problem and the objectives of Hanford Operations to adopt an improved system to dispose of such material.

Biology Program, U. of Washington & Hanford Oprns. Office

Dr. L. R. Donaldson summarized the aquatic biological investigations now being carried on at the Applied Fisheries Laboratory, University of Washington and at the Hanford Operations Office, Richland, Washington. The laboratories attempt to evaluate the overall effects of radiation on salmonoid fishes and their eggs. Over a period of years a study has been made of some three and one-half million fish. In addition to the work with salmonoid fish, work is being also undertaken on other species of fish including the common goldfish.

Dr. Donaldson reported on the field laboratory which had been established at the Hanford Works where evaluation studies are being conducted on the effect of the plant effluent on the life in the Columbia River. This laboratory is under the immediate supervision of Mr. Richard F. Foster, and due to the working arrangements between the Aquatic Biology Field

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Station and the Applied Fisheries Laboratory at the University of Washington have made it possible to carry out a maximum research program with a minimum of duplication.

Bikini &  
Eniwetok

Dr. Donaldson told of the radiobiological studies which had been carried on during 1946 in the southwest Pacific on the effect of the bomb on the fauna and flora of the atoll. Studies were resumed at Bikini in 1947 supported by specialist from other laboratories. Observations were made at Eniwetok during the Spring of 1948 and samples were collected for measuring the early contamination of aquatic forms that resulted from the "Operation Sandstone" tests. A field party sponsored by the Atomic Energy Commission returned to Bikini during the Summer of 1948 to continue these studies and some 2,000 ashed samples were collected at fourteen major collecting areas.

Medical  
Program

Dr. Norwood

Dr. W. D. Norwood, Medical Superintendent, reported on the program and of the continuous progress with respect to health of employees of the General Electric Company at Hanford Operations Office, its contractors and of the public in the area.

The hospital, known as the Kadlec Hospital, has a capacity of ninety beds uncrowded, however, there has been up to 135 patients hospitalized. It is proposed that the capacity of the hospital will be increased to 150 beds, which will take care of a permanent population of from 30,000 to 35,000 people. The staff consists of 28 salaried physicians, 3 surgeons, 4 obstetricians, 6 pediatricians, 12 internists, 2 eye, ear and throat and 1 eye physician. General Electric

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employees nearly all have availed themselves of a pre-payment sickness and hospitalization program.

Dr. Norwood expressed his thanks to the Committee for their very real and understanding interest in his problems. He further stated that the Committee brought to them "unparalleled knowledge in the various branches of medicine and biology and the combined mature judgment of men eminent in their respective fields."

Public Health Program-  
Dr. R. R. Sachs

Dr. R. R. Sachs, Director of Public Health, outlined the present public health program as it pertains to the worker and his family living in Richland. Vital statistics were discussed. Dr. Sachs stated that the birthrate is high, running between 30 and 35 per 1,000 population, while the death rate is about 2.5 per 1,000 population. Morbidity statistics were also of interest to the Committee. The State of Washington public health rules and regulations are complied with. Tuberculosis cases average about one case a month.

Dr. Sachs reported on all phases of nursing other than hospital, which included the public health nursing service where nurses are interpreting medical, sanitary and social procedures for the prevention of disease and promotion of health in the family and the community. Also maternal hygiene nursing, which includes post-natal care and child care. Special service is provided for the crippled child, either through the Public Health Service or the Crippled Children's Act.

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Health information is disseminated to the public by employees and the means of pamphlets, posters and newspaper stories, and with the aid of a health educator and a health activities committee.

A successful sanitation program is being carried out for water, food and milk.

Richland is a mosquito-infected area. Anopheles mosquitoes are a potential danger. But through airplane spraying, mist spraying, fogging, etc., the mosquito is being defeated.

Dr. Sachs stressed the need of a laboratory, chiefly for diagnostic services and secondly for the bacteriological analysis of water and milk instead of the present use of the Kadlec hospital laboratory.

The Committee expressed its approval of the programs as outlined and they felt that an unusually fine contribution was being made by all the staff in all the fields. Comment was made on the remarkable low death rate at Richland, even allowing for the difference in age of population.

Resurvey of  
Alamogordo

Dr. Jensen told of his recent visit to Alamogordo. The question whether the area should be fenced off as a hazardous area was thoroughly discussed. The grasses show a fairly high level of activity. The level of grazing is approximately 10-12 animals to 640 acres. The droppings of animals also have an activity. Dr. Jensen stated that it is proposed that ten head of cattle be purchased for studies which have been grazing on slightly "warm" areas for some two years and that





studies be performed to see if there is anything of a detrimental nature accumulated in these animals.

The problem presented by the disintegration of the fused trinitite which covers the area in a layer one-half inch or so in thickness of one-half mile radius was discussed and it was felt that active measures should be taken to remove this as a potential hazard.

It was the sense of the Committee that this was an engineering problem as to best methods of covering the trinitite.

The Committee adjourned for lunch at 12:50 P.M and reconvened at 1:20 P.M.

EXECUTIVE SESSION

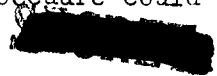
Medical  
Director  
for Div.  
Biology &  
Medicine

Dr. Warren proposed that consideration be given to the naming of his successor as Director of the Division of Biology and Medicine. Dr. Warren suggested the name of Dr. Joseph Hamilton of the University of California at Berkeley. The Committee agreed that the appointment be offered to Dr. Hamilton if it was agreeable to the Commission and the General Manager.

Relationship  
to ONR

Dr. Warren outlined to the Committee the proposed consolidation of many of the administrative functions of the Division of Research and the Division of Biology and Medicine.

Dr. Warren recommended that this central executive group could handle direct contractual relationships with some of the medical and biological contractor investigators instead of having the contracts administered by ONR. It was his belief that if such a procedure could be placed into effect



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through Atomic Energy Commission channels the administration of the contracts would run more smoothly. This procedure would eliminate the overhead charge by ONR for administering the contracts which the Office of Naval Research and the AEC staff believe is equitable, but would entail additional AEC administrative expense.

After a full discussion it was unanimously voted by the Committee that Dr. Warren should investigate with the officials of ONR and the Atomic Energy Commission direct handling of research contracts by The Atomic Energy Commission and make every effort to establish this new procedure at the earliest possible date.

It was understood that the Office of Naval Research should continue to handle contracts wherein there was a joint interest of the Office of Naval Research and the Division of Biology and Medicine in the research problem.

Univ. of  
Rochester

Dr. Warren presented to the Committee a letter from Dr. Henry Blair, Director, Atomic Energy Project, University of Rochester, which listed the personnel working on the project. In view of the size of the program at Rochester, the importance of the project and the amount of moneys that have been allocated to the University by the Atomic Energy Commission, Dr. Warren asked the Committee to make a study of the project and to report at the next meeting of the Committee "as to whether or not any steps should be considered between the Division and the University of Rochester as to the strengthening of the group."

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Letter to  
Dr. Robert  
Stone, U of  
Calif.

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A draft letter personally written by Dr. Alan Gregg to Dr. Robert Stone was circulated to the Committee for discussion. The letter set forth the policies of the Atomic Energy Commission and the Division of Biology and Medicine relating to experimental therapy and that it was a measure to be employed by the Committee to bring to Dr. Stone's attention the confines and limitations of his work under his AEC contract. With minor changes the committee recommended that the letter should go forward to Dr. Stone.

RW in  
relation  
to Tox-  
icity Lab.

Dr. Warren reviewed the RW program of the Chicago Toxicity Laboratory and presented to the Committee his suggestions as given to Dr. McLean on the organization of the RW Study Panel and an outline of its proposed activities. The members of the panel are as follows:

Dr. Franklin C. McLean, Chairman, Univ. of Chicago  
Dr. Shields Warren or Dr. John Z. Bowers, Division  
of Biology and Medicine, AEC  
Dr. L. S. Taylor, Division of Biology and Medicine, AEC  
Dr. Austin M. Brues, Argonne National Laboratory  
Dr. Harold C. Hodge, University of Rochester  
Dr. Thorfin Hogness, University of Chicago  
Dr. Raymond Zirkle, University of Chicago  
Dr. Robert D. Boche, University of Chicago  
Dr. Julius M. Coon, University of Chicago  
Col. James P. Cooney, M.C., Div. of Military Appli. AEC  
Col. John R. Wood, M.C. Medical Div., Army Chem. Ctr., Md.  
Captain H. H. Haight, MC., Office of Surgeon General  
Lt. Col. John R. Hall, M.C., University of Chicago  
Lt. Col. Robert H. Blount, Office of the Air Surgeon  
Lt. Col. Karl H. Houghton, M.C. Armed Forces Special  
Weapons Project  
Maj. Albert J. Bauer, M.C. Office of Surgeon General

A full discussion followed on the broad program of RW.

Const. of a  
building at  
UCLA for  
Nuclear Res.  
in B & M.

Dr. Warren circulated a draft letter which had been approved by the Office of the General Counsel to Dr. Stafford Warren, which explained the reasons of the Committee for

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their refusal to recommend to the Commission that funds in the amount of \$1,100,000 be allocated to the University of California, L.A. for the construction of a building for nuclear research in biology and medicine. With a few minor changes it was voted unanimously that the letter should be forwarded.

Hanford  
Program

Dr. Warren summarized the Hanford Operations Office program as outlined in their proposed budget. The need for expansion of facilities was thoroughly discussed and it was the sense of the Committee that it was unwise to set up an additional national laboratory at Hanford as it was primarily a production center and research in biology and medicine there should be directly applicable to local problems. Nevertheless, the Committee believed it highly desirable that adequate facilities should be provided for aquatic biology and for a farm for large animals because of problems of specific concern to operations at Hanford. It was the unanimous opinion of the Committee that appreciable economies could be made in the plans for the projected laboratory buildings and that temporary buildings would fulfill their present needs.

Relation-  
ship of  
AEC and  
OCDF

There was general discussion of the relationship of the Atomic Energy Commission to the problems of civil defense planning.

Dr. Warren pointed out to the Commission that the public would look to the Atomic Energy Commission for adequate information regarding protection and that under the Atomic

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Energy Act, no other agency has the necessary information to provide data for planning defense.

A further discussion was held on Dr. Bacher's remarks which were made at the September 11 meeting regarding the dissemination of AEC data to the public.

After a full discussion the Committee unanimously endorsed the recommendation of the Division of Biology and Medicine that in view of the danger to human life, and in fact to all life, that the Atomic Energy Commission should feel responsible and take an active role in imparting general knowledge and data to the public.

Policy with regard to Fellowship Clearance

Dr. Warren reported on the action of the Commission at a recent meeting lending their approval to the recommendation from the Division of Biology and Medicine that clearance of fellows would be required only in those instances where the fellow required access to classified information or to classified areas to further his program of research.

Distribution of Cyclotron produced isotopes

Dr. Warren introduced Dr. Kenneth Scott, representing Dr. Joseph Hamilton of the University of California, who presented some of the problems associated with the cyclotron-produced isotopes.

A proposal which Dr. Hamilton had submitted through the Sub-Committee on Radiobiology of the National Research Council seeking support for production of the isotopes was studied. It proposed that the Commission enter into contracts

[REDACTED]

[REDACTED]

with four selected universities which have expressed their willingness to enter into this program to facilitate research.

After a full discussion it was moved by Dr. Hastings seconded by Dr. Wearn and unanimously approved by the Committee that Dr. Warren should explore the possibilities of cyclotron-produced isotopes for a proposed research program.

Other  
Business

The next meeting of the Advisory Committee for Biology and Medicine was scheduled for Friday and Saturday, December 10 and 11, 1948 at Los Alamos, New Mexico.

The meeting adjourned at 4:45 P.M.