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M. W. Boyer, General Manager

April 14, 1952

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Shields Warren, M.D., Director
Division of Biology and Medicine
MONTHLY STATUS AND PROGRESS REPORT, MARCH 1952 -
DIVISION OF BIOLOGY AND MEDICINE

SYMBOL: BME:HCB

Transmitted herewith is the Monthly Status and Progress Report for the Division of Biology and Medicine for the month of March, 1952.

Enclosure:
Report

CC: J. H. Burchard

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ORGANIZATION & MANAGEMENT

[redacted]

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SURNAME ▶	Brown	Bugher	Warren			
DATE ▶	4/14/52	4/15/52	4/15/52			

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MONTHLY STATUS AND PROGRESS REPORT
DIVISION OF BIOLOGY AND MEDICINE

MONTH OF MARCH 1952

Research Activities

Radiation Effects of Phosphorus. (UNCLASSIFIED) Recent findings by the University of North Carolina in the study of radioactivity in the surrounding water on salamander larvae have been reported by Dr. D. P. Costello. It has been determined that the uptake of P-32 from the water produces chromosome breaks (mutations) in dividing skin cells. Thus radioactivity in the water in which aquatic animals live produces changes in their tissues and possible genetic mutations.

At North Carolina State College, a study by Dr. D. S. Grosch is being made of the genetic effects of ingested phosphorus. P-32 is being added to the food of the wasp Habrobracon, and results to date indicate that above 200 microcuries/gram, egg production is decreased and abnormal embryos increase in number. Thus ingested radioactivity such as might result from contaminated food is being shown to produce effects on growth of offspring as well as genetic mutations.

Activity of Fission Products in Animals. (UNCLASSIFIED) The uptake and deposition of several fission products into the edible tissues and skeleton of cattle have been under investigation at the University of Tennessee project.

It has been shown that protoactinium, tantalum, and lanthanum are poorly absorbed from the gastro-intestinal tract. Less than 0.01 per cent of the ingested amount of each of these elements is retained in the body, and thus their are not dangerous.

In experiments using strontium, yearling steers were fed 5 or 10 millicuries of S-90, and at intervals up to six months were sacrificed in order to determine the activity in the tissues. Activity in the meat was found to be very low, while the concentration in the bones was relatively high. Seven days after intake, approximately 70 per cent of the strontium had been eliminated by renal and fecal excretion. In lactating cows over a seven-day period, less than two per cent of the ingested strontium was secreted in the milk. Consumption of the milk

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would be dangerous because strontium would be accumulated in the bones.

Study of Radiation Effects in Dogs. (UNCLASSIFIED) The effects of radiation on the physical performance of dogs is being studied at Boston University School of Medicine in order to obtain data extrapolatable to man. Prior to whole body irradiation, the dogs are conditioned on a treadmill which operates at seven miles per hour. This training improves the physical fitness of the animals and is required for about a two-week period. After this period, the dogs are given radiation doses of various amounts and a study of the resulting work performance is made.

In addition, the dogs are also tested by conditioning through a maze pattern. Before radiation, the dogs could be trained to find successfully the select pathway which led them out of the maze. Dosages of 0, 125, and 250 roentgens were administered, and mental impairment became evident at 125 roentgens, with increased impairment noted at 250 roentgens. Further studies of dosages below 125 roentgens are needed in order to determine where impairment begins. Data of this kind are especially important in evaluating hazard-performance relationship in crews of nuclear powered submarines and aircraft.

Clinical Camera. (UNCLASSIFIED) A stereoscopic camera for photographing lens and cornea of the human eye has been developed at Howe Laboratory of Ophthalmology at the Harvard Medical School. This apparatus is a very ingenious device which will be of immediate and practical usefulness in connection with the radiation cataract investigations being made of the Japanese medical cases at Hiroshima and Nagasaki. Radiation cataracts can be photographed and a close study made of their development, progress, or regression.

Civil Defense Activities

Assistance to National Security Resources Board - Washington Area Dispersal Plan. ([redacted]) At the request of the Chairman of the National Security Resources Board the Civil Defense Liaison Branch has been asked to serve on an Ad Hoc Committee to make recommendations to the President on the dispersal of critical facilities now located in the nation's capital.

Data provided by the AEC will be used in the formulation of a set of basic assumptions to be used by executive agencies in testifying before the Congress on the dispersal legislation. (END OF RESTRICTED)

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National Research Council Committee on Disaster Studies. (UNCLASSIFIED) At the request of the Department of Defense, and in cooperation with many of the Executive Agencies, the National Research Council has recently constituted a Committee on Disaster Studies. Robert L. Carsbie and Harry L. Bowman have accepted invitations to serve as liaison member for architecture and as engineering consultant respectively.

AEC Certifying Office for Federal Civil Defense Training Centers. (UNCLASSIFIED) At the request of FCDA, the Civil Defense Liaison Branch will serve as a focal point for handling the appointments of AEC Attendants at the several FCDA training centers.

Industrial Health

1. Health Physics

Radiological Fellowship Program. (UNCLASSIFIED) Forty-seven Radiological Physics Fellows were selected on March 7, 1952 from among more than one hundred applicants for training in health-physics work in Commission and other radiation laboratories. The fellowship courses is of one year duration and will begin in September 1952. Twenty-five fellows will study at Vanderbilt University and take field training at the Oak Ridge Health physics laboratory. Twenty-two fellows will study at Rochester University and take field training in the Brookhaven health physics laboratory. Previous experience has shown that graduates of these courses are in high demand in the field of health-physics, and a large majority of them have been placed on AEC projects.

The fellowship program is administered by the Oak Ridge Institute of Nuclear Studies and selections are made by the Radiological Physics Fellowship Board. The Board consists of one representative each from Rochester University, Vanderbilt University, Brookhaven National Laboratory, Oak Ridge National Laboratory, Oak Ridge Institute of Nuclear Studies, and the Oak Ridge and Washington Atomic Energy Commission offices.

Neutron Symposium. (UNCLASSIFIED) A symposium on the biophysical and biological effects of neutrons, sponsored by the Division of Biology and Medicine, met in Washington on March 17-18, 1952.

Discussions which followed the meeting revealed that while present personnel monitoring methods are not entirely satisfactory, useable portable devices for adequate measurement of neutron flux over a wide range of energies have been developed. With respect to biological effects, it was agreed that cataract formation in the eye lens, and action on the gonads (sterility and genetic effects) were the critical neutron effects, and that these need evaluation entirely apart from any reference to a permissible exposure limit of 0.3 rem (roentgen-equivalent-man).

2. Industrial Medicine

Spring Meeting of Industrial Physicians. (UNCLASSIFIED) Industrial physicians engaged in the atomic energy program will hold a meeting in Rochester, New York, on May 15-16, 1952. The sessions will be held at the Atomic Energy Project, School of Medicine and Dentistry, University of Rochester.

3. Radiation Instruments

Fourth Technical Cooperation Conference. (UNCLASSIFIED) A Technical Cooperation Conference on Instrumentation is scheduled to be held this year in the United States. Brookhaven National Laboratory has been selected as the site for the fourth meeting which is scheduled for June 11, 12, 13, 1952. The Radiation Instrument Branch will be responsible for coordinating all the arrangements for the session. This will be the fourth in a series of annual Tripartite Instrumentation Conferences which have been held successively in Oak Ridge, Chalk River and Harwell for the purpose of exchanging information on Canadian, English and American radiation instrumentation developments.

Scintillation Crystals for Neutrons. (UNCLASSIFIED) The scope of the contract with the Harshaw Chemical Company has been expanded to include work on the development of processes and procedures for producing tin activated lithium iodide crystals. These crystals show great promise for use in neutron spectroscopy and other neutron measurements in that their sensitivity to thermal neutrons is much greater than most presently existing neutron detectors.

General

Trinity Site - Alamogordo, New Mexico. (UNCLASSIFIED) Governor Mechem of New Mexico recently protested the action of the Atomic Energy Commission to dispose of trinitite at the Trinity Site, scene of the first atomic bomb detonation. As a result, Dr. J. C. Hagner, Deputy Director of the Division, and Mr. Carroll Tyler, Manager of the Santa Fe Operations Office, met with the Governor in Santa Fe, New Mexico on March 11, 1952. The potential health hazard arising from the decay of trinitite, and the medical-legal problem inherent in the situation were discussed. It was stressed that the Commission was favorable to maintaining all historical features of the site consistent with removal of the potential health hazard. Action will be initiated by the Governor with the Department of the Army (which has cognizance of the land on which the site exists) and the National Park Services,

to recommend plans in addition to those already contemplated for the preservation of the historic interest of the site. The Governor will also maintain close liaison with Representative Fernandez who has introduced a bill into Congress for preservation of the site.

In the meantime, the work under a contract to surface the area of the site will be postponed for approximately 30 days.