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M. W. Boyer, General Manager

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

SYMBOL: BM:SW

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

Enclosure:
Report

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CC: J. H. Burchard

O'NEILL:cmr

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SCIENTIFIC STRAINS AND PROGRESS REPORT
DIVISION OF BIOLOGY AND MEDICINE
MONTH OF JANUARY 1952

Response Test Activities (Duster-Jangle) ()

Country-wide Monitoring. During the month of January, the final report covering the country-wide monitoring program for measuring radioactive fall-out was received from the New York Operations Office. This report represents the final analysis and findings of the fall-out studies in connection with the 1951 fall tests previously mentioned (November and December reports).

This collection of experimental data assembled for the first time in complete report form presents important and useful observations on which tentative conclusions may be made. The report states, that in the Duster series for example, the fall-out occurred predominantly along a path some 600 to 1,000 miles wide extending northeast across the United States. The average integrated activity along the path of fall-out for the central United States was about 0.9 curies per square mile. The highest integrated activity was 6.2 curies per square mile found in Rochester, New York. This figure however represents an integrated dose of only some 1g milliroentgens which is far below the maximum permissible limit of 50 mr/day continuous over a lifetime. It is of interest to note that about 92 per cent of the fall-out in Rochester occurred during a three-day period of snow and rain.

During the Jangle series, the greatest radioactive dust concentrations were observed at Elber, Nevada, where the highest 24-hour average activity is now reported to have been 0.02 microcuries per cubic meter of air. This is well below the safe level of 1.0 microcurie per cubic meter agreed upon by the Penicillium Committee (July report).

An expansion of the country-wide monitoring program is planned with the further cooperation of the U.S. Weather Bureau for the Tumbler-Sharp series. The Bureau will have additional stations, making a total of 120, which will collect the fall-out. These fall-out samples will be sent to the Health and Safety Division at New York for uniform counting through the use of a new automatic counter developed by the New York Laboratory. (END OF SECRET)

More-Biological Effects of Proven Irradiation (UNCLASSIFIED)

Interesting progress has been demonstrated by the Mareham Project under Dr. R. S. Zittle at the University of Chicago Institute for Nuclear

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Seviers. The purpose of the project is to study the biological effects of high-energy protons when applied to selected small parts of terrestrial cells in a beam only about two microns square. These culture cells from bacteria of small eukaryotes have been irradiated in various stages of mitosis, and neutron platinum made of the double species which occur during subsequent cell division. When compared with platinum of normal cell division, they present a dramatic concept of the relative effects of protons on biological tissues. A plan is under way to make some of these films available to external institutions through the U.S. Office of Information.

Bathelien Ginter's Speech (UNCLASSIFIED)

The National Research Council Radiation Effects Committee which reviews and recommends for AEC support projects involving radiation external studies, met on January 28, to review the status of research in this field. Considerable progress has been made in the past year. Anecdotal evidence indicates that approximately 1 x 10⁶ neutrons per square cm. are necessary to produce full blown tumors in rabbits within 100 days. A useful theory explaining the long latent period between the time of exposure and the development of tumors was introduced by one of the members of the Committee. This theory is consistent with all the known facts and involves the migration of damaged cells from the external surface of the lung past the capilar and around to the peritoneal surface. A follow-up study from Hiroshima and Nagasaki supported approximately 16 months after the original study revealed the following interesting information: 50 per cent of the animals had progressed from 1 to 2 grades in a scale of 4 grades, and of the 20 per cent not progressing, 20 per cent actually showed regression of about the same degree as those which had progressed. This indicates that a radiation outbreak does not necessarily progress to a full blown state requiring surgery.

Proposed AEC Waste Disposal Policy (UNCLASSIFIED)

A proposed statement of AEC policy applicable to the control of radioactive wastes discharged by AEC contractors was formulated and the principal features presented to the Advisory Committee for Policy and Radiation for consideration at the meeting of January 23-25. In the present form, the policy is based on recommendations of the subcommittee on Internal Use of the National Committee on Radiation Protection to be published by the Bureau of Standards as Handbook 22. The report of the Committee from data from which maximum permissible rates of intake of radioisotopes into the body over periods of time less than 100 days can be computed, and recommenda-

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that for larger periods of time medium penetrable rates be reduced by a factor of 10. The intent of the policy is to decide for the contractor an objective in terms of limits of exposure to off-site personnel with a minimum of special restrictions.

Item of Radiation Instruments and Radiolabors (UNCLASSIFIED)

During the month, approvals were granted for items for civil defense including use as follows: Instrumental - Texas Radiation of Defense and Museum Building, and the Civil Defense Agency, Supply of Items;
Radiolabors - Georgia State Civil Defense Agency.

Radioisotope Counter Survey System (UNCLASSIFIED)

Specifications for a portable field type radioisotope counter survey meter were jointly developed by the U.S. Geological Survey and the Atomic Energy Commission during the month of January. Instruments to bid on the production of 100 of these units were sent to 25 instrument companies. The Low Bidder, Nuclear Research Corporation of Philadelphia, Pennsylvania, was awarded the contract. Delivery of 25 of these instruments is required by May 1, 1952 for use by the USGS and AEC field and survey teams.

New Radiology Laboratory, San Francisco, California (UNCLASSIFIED)

On January 11, the new Radiology Laboratory of the University of California Medical Center, San Francisco, having a 70-million volt synchrotron was formally opened. The members of the Advisory Committee for Biology and Medicine and the staff of the Division of Biology and Medicine participated in the ceremony.

This facility represents the third of four major AEC-supported laboratories for research on the treatment of cancer to be completed. Experimental therapy units are now operating at Oak Ridge and Brookhaven. The Argonne Cancer Hospital, which is the fourth facility, should be getting into full operation in mid-1953.

Construction of Biology Building at Los Alamos (UNCLASSIFIED)

Construction of the new Biology Building at Los Alamos has been started. The cost of this building will be approximately \$2,283,000 and the estimated completion date is July 1953.

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Conference - Radioactive Carbon (C-14) (UNCLASSIFIED)

A conference was held at Argonne National Laboratory on the toxicity of radioactive carbon to animals and humans, and proper methods of handling it. Representatives from essentially every laboratory in the United States which has had extensive experience with radioactive carbon attended the meeting.

The information presented during the meeting indicated that current safety regulations perhaps have been unusually stringent and could be relaxed somewhat, even though Carbon-14 is considered hazardous.

Scintillation Counter Symposium (UNCLASSIFIED)

The Scintillation Counter Symposium was held on January 29-30 in Washington, D.C. A significant side light of this meeting was the fact that nearly 400 registrants attended. This represents an increase of 100 per cent as compared to registrations for the last meeting. A similar conference is being tentatively scheduled for mid-1953.

FEDA Conference of State Civil Defense Directors (UNCLASSIFIED)

At the invitation of the Federal Civil Defense Administration, Commissioner T. E. Glavin addressed the Conference of State Civil Defense Directors on January 11 at the Wardman Park Hotel, Washington, D.C. His address was on the subject of AEC-FEDA problems and relationships and the ways in which AEC has been able to assist the national civil defense program. Following his formal remarks, Commissioner Glavin and members of the staff of the Division of Biology and Medicine responded to questions from the floor. Copies of Dr. Glavin's address were provided the staff of the Joint Committee on Atomic Energy on January 15.

Meeting of the Advisory Committee for Biology and Medicine (UNCLASSIFIED)

The Advisory Committee for Biology and Medicine held their 30th meeting at the University of California, Berkeley, California, on January 10, 11, 12, 1952.

On January 10, members of the Committee, together with staff members of the Division of Biology and Medicine and Dr. H. C. Fidler of the Berkeley Area Office, visited the Davis Campus of the University of California, where studies on the effect of radiation on the longevity of

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dogs are being carried on.

On January 11 the staff of the Radiation Laboratory at the University of California reviewed for the Advisory Committee the various AEC research projects. The meeting was followed by a visit to the Livermore Site and to the opening of the new radiology laboratory in San Francisco, California. Next meeting of the Committee will be held in Washington, D.C. April 4-5, 1952.

Biomedical Test Planning and Screening Committee Meetings [REDACTED]

Two meetings of the newly established Committee were held in Washington during January. The Committee includes representatives of the Department of Agriculture, Public Health Service, Division of Biological Sciences of the University of Chicago, Los Alamos Scientific Laboratory, New York Operations Office and the Washington AEC Divisions of Military Application, Reactor Development, and Biology and Medicine. The primary responsibility of the Committee is the long range planning for biomedical portions of the nuclear weapons tests conducted by the Atomic Energy Commission.

The first meeting was a general orientation session. The second meeting was attended by Dr. Alvin C. Graves, Scientific Director of the Test Program, and Dr. Randolph Lovelace, Director of the Lovelace Foundation. Major consideration is being given to fission fall-out materials and their movement in soils, in bodies of water, uptake by plants and animals, and aquatic organisms. It was agreed that these problems would be most serious with respect to underground detonations. Although some of the projects may need to be carried on at the test site, much of the work can be done by collecting the active fall-out material and transporting it to the laboratories for plant and greenhouse studies. (END OF [REDACTED])

Structures Test Planning and Screening Committee (UNCLASSIFIED)

This Committee held its first meeting on January 9 in Washington, D.C., following a joint meeting with the companion committee on biomedical experiments (see above). Subsequently, the Structures Committee met again on January 10 and January 31. Test proposals have been presented to the Committee by the Federal Civil Defense Administration, Public Buildings Service of GSA, and several AEC Divisions. Representatives of the Los Alamos Scientific Laboratory and the Air Forces Special Weapons Project of the Department of Defense were present at the January 31 meeting and gave the Committee valuable guidance with respect to previous test experience and future possibilities.

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Visit to Cold Spring Harbor Project (N.Y.) (UNCLASSIFIED)

The project conducted by Dr. Bruce Wallace at Cold Spring Harbor, L.I., New York was visited by a representative of the Division on January 28. The studies by Dr. Wallace of experimental populations of *Drosophila* exposed to chronic irradiation with radium of 5 r per day through the lifetime of the flies (or about 300 r total) show conclusively that the fly populations adjust to the increased deleterious genetic mutations and the lethal genes become balanced without over-all injurious effects or diminution in numbers as compared with controls. With chronic exposure of 1,000 r total however, the population rapidly succumbs and dies off.

Meeting of U.S. Public Health Service (UNCLASSIFIED)

At the request of interested States, the USPHS has been making a survey of the health problems associated with uranium mining. A meeting attended by a representative of the Division of Biology and Medicine was held in Cincinnati, Ohio January 23 by the USPHS to review the progress of this work. Conditions in some 48 mines have been investigated by USPHS, and, as a result of the survey, it is indicated that additional ventilation may be desirable. Consequently, the Division of Raw Materials in cooperation with the USPHS is arranging for more controlled studies of the effects of ventilation in certain selected mines. It is expected that the USPHS will prepare a report of their findings for the mine operators and interested States.

Assistance to FCDA Project "East River" (UNCLASSIFIED)

"East River" is the code name for a study intended to assess and evaluate the impact of atomic, biological, chemical and radiological warfare on the national economy. This study is being undertaken by Associated Universities, Inc. as contractor to Federal Civil Defense Administration, Department of Defense, and the National Security Resources Board.

Members of the Civil Defense Liaison Branch met during the month with representatives of this project to discuss estimation of physical damage and casualties in the event of a wide-spread atomic attack in this country. Data on Japanese experience at Hiroshima and Nagasaki were provided this group.

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