

M. W. Boyer, General Manager

February 12, 1953

John C. Dugher, M.D., Director, Division of Miology and Medicine

MONTHLY STATUS AND PROCHESS REPORT, JANUARY, 1953 -DIVISION OF BIOLOGY AND MEDICINE (274)

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Transmitted herowith is the Monthly Status and Progress Report for this Division covering the month of January, 1953.

Enclosures Report

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MONTHLY STATUS AND PROCESS REPORT

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Itvision of Biology and Medicine

MONTH OF JANUARY, 1953

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## Research Activities

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of Biology and Hedicine has reserved in its 1953 budget some \$6,500,000 for the finencial support of an estimated 360 research projects in omnoer, medicine, biology, and biophysics to be conducted at universities, bespitals, and other institution laboratories throughout the country. The estimate includes approximately \$5,500,000 for the remeal of some \$95 research projects, and \$700,000 for antidopated support of new worth-stile research projects, and \$700,000 for antidopated support of year, the Division has renewed some 117 projects at approximately \$2,500,000 in addition, 34 new research projects totaling approximately \$100,000 were approved. In the month of Jerunary alone, emstonarily a slow month for contract actions, the Division approved 14 renewals at \$150,000 and approved five new projects for a total of \$40,000.

Megairatory Exchange Recording System. (UNICASSIFIED) Equipment which will greatly facilitate and improve the accuracy of studies on the action of ionising radiation on membraian respiratory metabolism has recently been developed under a National Cancer Institute. Et project. This equipment will permit continuous automatic analysis and recording of total metabolism of small laboratory arimals. The analysis and is undisturbed by any attachment to the apparatory arimals. The animal is undisturbed by any attachment to the apparators and can remain free on analysis. The menty developed equipment can be collected for mitrogen analysis. The menty developed equipment can record the rate of carporatory quotient, the rate of carbon-dioxide production, and the respiratory quotient, continuously for an indefinite period, and with a degree of remailinguished. It provides also an integrated tabulation of the total respiratory gas exchange over any set period. The combined records permit ready calculation of the separate rates of consumption of fats, proteins, and carbodydrates, and the shifting disturbances of the metabolism in this regard, in parallel with the entractive activity.

Hadistion-Induced Cataract Study. (UNCLASSIFIED) At the State University of lows, a quantitative study of radiation-induced cataracts is currently in progress. This group has been comparing the effectiveness of fast neutrons (cyclotron-produced) and x-irradiation (200 NV) on the production of cataracts in laboratory mice, in both single and cumulative doses. The median effective (single) dose for the production

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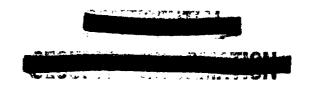
of complete cataracts was found to be about 210 r.a. p. for the neutron radiation and 860 r for the x-radiation. In the multiple exposure experiments (with weekly neutron irradiation of 70-90 resp. and x-irradiation of 300-400 r), there appeared to be a greater loss in the effectiveness of x-irradiation than with corresponding neutron fractionation.

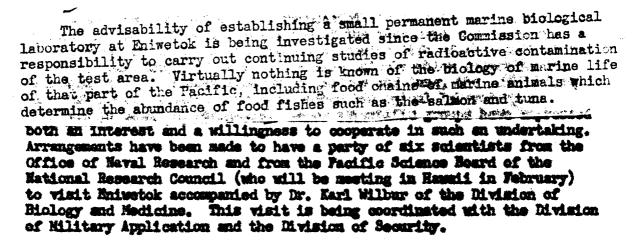
Effects of Radiation on Ocular Lane. (UNILASSIFIED) Investigators at the Kresge Kye Institute in Detroit, studying the effects of neutrons and other radiations on the ocular lane, have reported some interesting findings. Their observations suggest that the portion of the lane which is most sensitive to x-ray damage is the spithelium, and, of the compounds investigated nuclear protein is the first to be affected. This finding is consistent with the observation of others who have found that x-rays produce a more or lass immediate effect on cell division, presumbly through their affect on cell mulei. A secondary chanical effect of x-irradiation reported by this group is the inhibition of earbohydrate metabolism. Studies are being continued to further elucidate the mechanism involved.

Improved Tracer Technique for Blood Volume Determination.
(UNCLASSIFIED) Investigators at the St. Louis University School of Medicine have developed a useful new medification of tracer technique for the study of human blood volume and turnover. In the study of cases of severe closed head injuries, the usefulness of the results has been partially vitiated by the delay caused by the messesity of insubsting the patient's own blood with the tracer. The insbility to predict the time and place of arrival of these patients led to unavoidable delay in initiating the procedure; and variation in therapy instituted during this period further confused the picture. The new procedure avoids these difficulties by making use of "universal" donor (Rh-negative, type 0) red cells. Large batches of these cells are tagged with Gril every few weeks at a central station and divided into a number of single dose aliquots, some of which are stored at each of several hospitals. This permits immediate initiation of the blood volume determination upon the patient's arrival at any of these points.

### General

Proposed Biological Laboratory at Eniwetok. (UNGLASSIFIED)
Beginning with the Bikini tests in 1946 and continuing through the
recent tests at Emission, a program has been conducted to study the
radioactive contamination of plants and animals in the Bikini and
Eniwetok areas. The investigations have been carried est chiefly by
the Applied Fisheries Laboratory of the University of Washington, with
surveys being made immediately following atomic detensitions and resurveys after intervals of several months or longer.



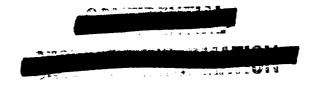


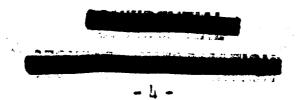
During the visit to Enimetok the group will wisit Ferry Island to inspect present laboratory facilities and evaluate the site from the standpoint of possible future facilities.

Tri-Partite Conference on Permissible Doses. (UNGLASSIFIED)
Delegates from Canada, the United Kingdom, and the United States will
meet in Washington to participate in an international conference on
permissible dose levels on March 30, 31, and April 1, 1953. This will
be the fourth meeting of the Tri-Partite Conference on Permissible
Doses which is held periodically to review the permissible dose levels
for both external and internal radiation. These periodic reviews permit
a maximum exchange of information and experience on permissible dose
levels, thus minimizing variations in standards between the participating
countries.

Cesium Teletherapy Unit for Gencer Research. (UNGLASSIFIED) The Oak Ridge Institute of Muclear Studies recently smarded a contract to the W.F. and John Barnes Company of Rockford, Illinois, for design and construction of a prototype Cesium-137 teletherapy unit. Delivery of the unit is expected within a year; it will be used for denoer research under the Teletherapy Evaluation Program by the CRIMS Medical Mivision and the participating medical schools.

Mational Laboratory Spring Program Reviews. (UNCLASSIFIED) It is plasmed that the practice of holding spring reviews of the national laboratory programs will be continued this year as in the past. A sumpling of opinions has indicated that the management staffs of the national laboratories, operations offices, and staff members of the Washington program divisions have found these reviews to be extremely valuable from the standpoint of over-all review of programs and review of financial requirements for ensuing budget years.





### Civil Defense Activities

Transmittal of Weapons Information to FCDA.

As reported periodically, the Division has transmitted information to the Federal Civil Defense Administration in various established atomic wealons <u>effects</u> categories, and upon the showing of justification of need by the FCDA. These categories have been mutually agreed upon under a cooperative agreement with ARSWS of the Department of Defense.

of information in order to effect a broadening and simplification. At the request of AFSWP the Division has reviewed and commented upon the proposed revision.

Concurrently, the FCDA has requested "broader access to certain types of information available to the AEC." This request involves weapons development data, as well as the effects categories mentioned above. In reply the Commission has pointed out that all information available to date in the agreed-upon categories, up to Operation IVY, has been provided; that other agencies such as NSC, CIA, DOD, and NSRB are inextricably concerned with this request and that their collaboration is necessary; and that specific review of present FCDA needs be accomplished through existing liaison channels.

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