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ADVISORY COMMITTEE FOR BIOLOGY AND MEDICINE
TO THE
UNITED STATES ATOMIC ENERGY COMMISSION
WASHINGTON 25, D.C.

January 19, 1962

Dear Dr. Seaborg:

The 89th meeting of the Advisory Committee for Biology and Medicine was held December 8 and 9, 1961 at the Lawrence Radiation Laboratory, Berkeley, and the Radiological Laboratory, University of California Medical Center, San Francisco. All members were present with the exception of Dr. Horsfall and Dr. Moore.

Dr. John H. Lawrence, Director of the Donner Laboratory, and members of the staff gave a comprehensive review of their program. We were gratified that the excellent research of the past years continues to be directed to problems of major importance in the application of nuclear energy in medicine. The investigations in progress are directed to such fundamental problems as the role of trace elements in health and disease, the physiological effects on radiation to bone marrow and other proliferating tissues, and the biological effects of heavy ion irradiation. In the last named field, this laboratory has been a pioneer.

Because of the importance of the extension of knowledge concerning the biomedical results of heavy particle bombardment, we continued our consideration of the proposed biomedical accelerator for the Berkeley Campus. We are all agreed that sound and imaginative work in this area should have a high priority and that no greater competence exists than is to be found in the Lawrence Radiation Laboratory complex. We agree with Dr. Lawrence, however, that it is difficult at this time to visualize a continuing program in this field which would justify the substantial annual and operating costs involved. We feel that more study is needed to clarify the objectives of a long-time program. Since, even if approved now, the accelerator would take about five years to design and construct, and since there is an urgency in the space program for more exact information, we recommend, without prejudice to the further consideration of this proposed accelerator, that the currently operating accelerators be surveyed as to the possibility of their being used in a top priority program in the heavy particle effects on living structures. In this manner, it may be possible to meet the immediate requirements and still permit a careful development and siting of a long range Commission program.

The outstanding character of the work in photosynthesis at the Lawrence Radiation Laboratory is well established. We consider that the consistent support of this research by the Division of Biology and Medicine over many

years has been an essential element in its progress. We feel that work in this and related biochemical fields is a very important segment of the radiobiological program.

One session was devoted to visiting the program of the Radiological Laboratory of the Medical Center at the San Francisco Campus. This project has been directed from its inception in 1948 by Dr. Robert S. Stone, one of the outstanding leaders in the development of radiation therapy for cancer. Since 1951, Dr. Stone and his staff have been studying the value in cancer therapy of 70 mev X-rays produced by the synchrocyclotron established by DBM. This instrument, for the first few years plagued by faults in design now has, we believe, the highest duty cycle of any megavoltage apparatus for cancer therapy in the U.S. A series of patients with bladder carcinoma has been treated with results that appear to be generally somewhat better than with conventional supervoltage machines. Dr. Stone, however, does not feel that the evidence at present would justify a recommendation for the more general use of X-ray sources of this cost and energy range.

With the work with the synchrocyclotron, there is associated an excellent small program in radiobiology which deals with fundamental problems such as agine, life span and genetic changes in animals exposed to electromagnetic radiation.

The Committee reviewed the nominations from the biomedical field for the Ernest O. Lawrence Award and made its recommendations in a separate letter to the General Advisory Committee.

The Advisory Committee held its ninetieth meeting at AEC HQ on January 12 and 13, and a report of this meeting will be sent to you in the very near future.

Sincerely yours,

John C. Bugher

John C. Bugher, Chairman
H. Bentley Glass, Vice-Chairman
Fred J. Hodges
James G. Horsfall
Robert F. Loeb
Leonidas D. Marinelli
Carl V. Moore
James H. Sterner
Harland G. Wood

Dr. Glenn T. Seaborg, Chairman
U. S. Atomic Energy Commission
Washington 25, D. C.

(Note: Drs. Moore and Horsfall were not in attendance at the meeting, therefore did not review draft of this letter; Dr. Loeb attended the meeting but was not available for review of draft)