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November 4, 1946

Dr. S.L. Warren
School of Medicine
University of Rochester
Rochester, New York

Dear Dr. Warren:

In reference to the Proposal for a Biological Program with High Energy Radiation from the Betatron, submitted by Dr. Andrew H. Dowdy, I wish to say as follows:

In a recent paper, "Protection Against High Energy Roentgen-Rays. Caldwell Lecture 1945", in the American Journal of Roentgenology and Radium Therapy, December 1945, I have pointed out that the effect of multi-million volt x-rays on the blood forming organs should be relatively greater than in the case of the gamma rays of radium, because of the pair formation process, which becomes predominant at very high photon energies. At present no one knows what safety factor should be introduced in the permissible daily dose of 0.1 r to take care of this phenomenon, and how this factor varies with the energy of the radiation.

In my opinion it is very desirable to determine this factor experimentally. The work should be done in a properly equipped laboratory, staffed by men with the necessary training and experience to get significant and comparable results without too much preliminary experimentation. I believe that these conditions are met by the group at the University of Rochester.

There is some question in my mind as to whether the energy of the x-rays produced by a 50 megavolt betatron is sufficiently high to bring out unequivocally the expected difference in the permissible daily dose. A 100 megavolt betatron would be better in this respect. However, the machine and housing would be much more expensive and the

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delivery time quite indefinite. A 50 megavolt betatron might well be a reasonable compromise.

The cooperative arrangement suggested by Dr. Dowdy, whereby the Manhattan District would pay for the betatron and the University of Rochester would pay for the building, seems reasonable to me. I do not know what the policy of the Manhattan District is in such matters, but research contracts of this type have been made recently by the Navy.

Yours sincerely,

GF:KR

G. Failla

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