[redacted]

405676

(60)

John H. Roberson, Director of Research and Medicine
Edward McCrady, Chief, Biology Division

December 26, 1950

JOSE EXPERIMENT IN CONNECTION WITH OPERATION GREENHOUSE

R

SUBJECT: [illegible]

On December 18, 1950, Drs. Hollaender, McCrady, LeRoy, Langham, Draeger, Zelle, Snell, Brandt, Furth, Sacher, Kimball, Householder and Cosman met in the Biology Division of ORNL, to discuss plans for making a study of longevity, neoplasms, and cataracts in the mice which survive the test in the operation Greenhouse. In the course of the discussion it developed that the LAF_1 strain of mice selected for the experiment has some very important disadvantages. In the first place, the natural incidence of tumors in these mice is exceptionally high. More than 50% of them have lung tumors, about 40% have leukemia. Indeed, if the statistics given at the meeting can be trusted, practically all of these animals develop some sort of a tumor in the course of a lifetime. Accordingly, they are extremely poor material for use in an effort to determine the effect of radiations in producing neoplasms. Inasmuch as extremely large numbers of animals would be necessary to demonstrate conclusively a small percentage increase, it had been decided that a doubling of the incidence of tumors would be taken as a significant effect. Obviously, it is impossible to double the incidence of a type of tumor which already occurs in more than fifty percent of a population; so that the most that could be hoped for would be evidence of a change in the time threshold for appearance of tumors, and this would be especially hard to get if the same animals are used for longevity study and thus cannot be examined internally until after natural death.

In connection with the cataract study, Dr. Furth has recently shown the mice in his colony are so extremely sensitive to cataract induction by radiation that almost any dose applied results in a 100% incidence of cataract if time enough is allowed. If this is true of mice in general, some other kind of mammal would have been more advantageous for a study of cataract induction; and again, the most that can now be hoped for from the present experiment will be some data about the time threshold. Thus, of the three major purposes of the study, only the last (i.e. longevity) could be satisfactorily investigated on this strain of mice. In no case would an extrapolation to man have any significance, as we know nothing about whether man is similar to, or more, or less sensitive than the mouse, in any of these respects. Accordingly, it was agreed that the only intention of the study would be to get a comparison between the mixed, high intensity radiations to which they would be

subjected in the Greenhouse test, and the pure, low intensity radiations which can be applied under laboratory conditions. For the cost involved this is not an impressive objective.

Some practical problems arose in connection with personnel and money. Dr. Furth now feels he will need six people instead of the five originally suggested - three technicians and three animal caretakers. Dr. LeRoy says there is no possibility of obtaining Naval Corpsmen for this kind of work, and the AEC has so far agreed to have this work done in Oak Ridge only if it does not involve any additional people or funds. This problem was thus left unsolved. In the same way, Dr. Hollaender feels that 25 to 30 thousand dollars a year would be required for the next two years, and there is no obvious source for this. He suggested that he should be allowed to use money "saved" by a change in bookkeeping at ORNL which relieves his Division of some of the overhead formerly charged to it. From the point of view of the AEC any such saving is fictitious. It does not reduce the total cost of Oak Ridge operations to the Commission, so that it is unrealistic to speak of financing additional work by such means.

In view of the unfortunate choice of an animal, which it is now too late to remedy, and of the considerable time and money which will be involved in such a study, it seems very doubtful that the project is worth the cost.

Edward McCrady

McCrady:ec

[redacted]