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April 27, 1951

REPORT OF BIOLOGY RESEARCH CONFERENCE ON PHYSIOLOGICAL EFFECTS OF RADIATION AT THE CELLULAR LEVEL SPONSORED BY THE BIOLOGY DIVISION OF OAK RIDGE NATIONAL LABORATORY AND THE ATOMIC ENERGY COMMISSION AT OAK RIDGE, TENNESSEE, APRIL 12 AND 13.

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On the way to the conference Dr. Warren boarded the train at Washington, D. C., so we had an opportunity to discuss numerous matters. I showed him a letter from Dr. LeRoy which had arrived the morning of the 11th which reassured me considerably with regard to the conduct of the animal tests in the Greenhouse Project. We discussed briefly the dog studies on the effect of minor doses of I-ray on life expectancy which have been commonly known as the Hepa experiment. He said that the withdrawal of NEPA from Oak Ridge would in no way affect the prosecution of this experiment. In the course of our conversation, I mentioned Dr. Sher's work on superficial cancers using Thorium X. Dr. Warren was very much interested in what I said though he had not as yet seen the preliminary proposal that was submitted to Washington at the time of the New York Office Information Meeting in February. I assured him that we would trace the proposal and see that he got to consider it as soon as possible.

The morning session on Thursday convened at 9:30. Dr. Alexander Hollaender, Director of the Biology Division, opened the session with a few remarks. He was followed by Dr. C. E. Larsen who gave a short address of welcome. Dr. Warren made a few introductory remarks in which he spoke of the great strides that have been made in the field of radiobiology in the last few years. He pointed out that if a meeting such as this had been called 20 years ago, the attendance would have been too small to fill the first two rows of seats.

The morning session was given over to the discussion of enzymatic functions. Dr. Alexander L. Douce of Rochester University spoke on "The Interpretation of Chemical Analyses and Enzyme Determinations on Isolated Cell Components." His statements were based on the work that he and other members of the group at the University of Rochester have done. He spent some time on the processes of separating various cell components and critically evaluating them. Dr. David E. Green of the University of Wisconsin gave the second paper in the morning on "Organized Enzyme Systems." He made the point that full understanding of enzymes and enzyme action depended upon study of the organized system as a whole. Both of these papers were very well prepared and well presented. However, I thought that the discussion overshadowed the papers.

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The afternoon session was given to the discussion of metabolism and osmotic relations. Dr. Edgar J. Boell of Yale University spoke on "Metabolism and Possible Implications in Connection with Radiation Effects." As indicated by that part of the title which says "possible implications," this paper was rather theoretical and conjectural in nature. It apparently is a matter to which Dr. Boell has given considerable thought and study. He succeeded in presenting what appealed to me as a coherent and well-balanced explanation. It was apparent from the discussion, however, that many of the points he made will be subject to considerable laboratory testing before they are finally accepted or rejected. The second talk in the afternoon by Dr. Lawrence R. Blinks of the Hopkins Marine Station on "Physiological Effects of Radiation in Marine Algae" was a report of their survey in the water and on land where the last previous bomb tests were made in the Pacific. He reported very little, if any, over-all killing of algae. They thought they had found one area from which the algae had been cleared by the blast. They found later, however, that this area had been the scene of a fire at the time of the blast. Since the algae had not returned to this area, they felt that the chances were rather small in the face of the present luxuriant growth of algae which is comparable to that on distant reefs could exist if the area had been denuded of algae by the blast. Most of his report was negative; that is, no effects were found. However, they did find a few abnormalities which may later prove to have been caused by the irradiation from the bomb burst.

The subject for the program Friday morning was "Mammalian Problems." Dr. Morton McCutcheon of the University of Pennsylvania gave the first paper entitled "Problems and Effects of Radiation on Endothelial Permeability." This paper was especially interesting to me for Dr. McCutcheon was not at all averse to talking in language that I could understand. Further, his thesis was so carefully and logically built up that I as a layman in his special field accepted it wholeheartedly. The later discussion, however, showed that not all authorities agree with all of his definitions, especially his definition of permeability. Dr. Ludwig von Sallmann of Columbia University gave the second paper on "Effects of Radiation on Cytology of the Eye." Dr. von Sallmann's presentation seemed to me a typical European professor's lecture. His very broad German accent appeared to make it difficult for some of the audience to understand him. I was especially interested in some of his points because of some work done by an oculist in Washington for an advanced degree on which I served as the consultant.

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The afternoon session on "Erythrocyte Problems" was opened with Dr. Arthur K. Parpart's paper "Some Problems in Connection with Ion Permeability of Erythrocytes." I must confess that though I was interested in Dr. Parpart's presentation of his material, I did not fully grasp all of the significance of his results. From the discussion, however, it was apparent that many of those present were interested in the same problems and some of them had ideas of their own with regard to Dr. Parpart's conclusions. Dr. Charles W. Sheppard of the Oak Ridge National Laboratory gave a paper on "The Effects of Radiation on Erythrocytes." Though I am not technically prepared to discuss Dr. Sheppard's conclusions from his data, I do feel that something should be said about the remarkably consistent results he appears to be getting from the curves he presented. At a previous meeting in Chicago I heard Dr. Sheppard discuss the precision of some of his work and saw some curves fitted to experimental points which he used to illustrate his statements. By his own statement, he uses one inbred strain of mice. That this, however, would not in itself insure such excellent fits as he secures is a statement that I do not hesitate to make on the basis of experience with many animal experiments. It would appear from the numbers he reports at different points on the curve that some scheme of eliminating outlying results must be used. Of course, any man has a right to do this but he should at the same time present all his data and his reasons for eliminating some of them so that the critical reader or listener can form his own judgment concerning conclusions that should be made and their reliability. This great precision which Dr. Sheppard seems to have achieved appeared to dampen the spirits of his listeners for his paper received the briefest discussion of any paper presented.

After an intermission Dr. David Nachmansehn of Columbia University gave a paper "The Effects of Radiation on Nerve Tissue." This paper was extremely well presented and drew considerable discussion. My chief interest in it, however, was based on his method of experimentation and interpretation of results. It would seem to me that some of his conclusions need to be tested somewhat extensively by other persons on larger numbers of animals.

cc: Division of Biology and Medicine, Washington, Attention: Dr. Zelle ✓  
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