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April 17, 1951

Shields Warren

ORNL BIOLOGY INFORMATION CONFERENCE, APRIL 12-13, 1951

SYMBOL: BM:SW

The conference was well attended, 102 having registered. The plan was to have four 1/2-hour talks each day with long discussion periods. The discussion was very active and profitable. The general subject of radiobiology at the cellular level was well chosen in view of ORNL's interest in microbiology.

The first discussion by Dr. Dounce in relation to the mitochondria and other particulate cellular constituents was very worthwhile. There was a good deal of discussion as to the enzymatic functions of the various cell constituents and it was brought out that there was no enzyme that was significantly localized.

Green of Wisconsin discussed organization and enzyme functions with some emphasis on the difference in in vitro and in vivo effects. It was brought out that both gramicidin and dinitrophenol inhibit phosphorylation without any effect on oxidation.

In the afternoon there was a discussion on the permeability of marine algae as related to the Bikini tests of general interest. Parpart discussed the permeability of red cells and brought out that there was no change in permeability up to 500,000r. The following day McCutcheon discussed capillary permeability, particularly in relation to large molecules. It was emphasized that cortisone counteracts hylouronides, by and large stasis evidence of capillary permeability.

Furth spoke of the lymph flow experiments and pointed out the significance of iron deposit in lymph nodes.

Von Sallmann discussed x-ray cataract and pointed out the early changes at the equator of the lens in rabbits. He felt that probably the primary lesion was in the cell nuclei of the proliferative zone with some vacuole formation in the posterior lens. He feels that mitosis probably occurs at ten times the rate that Cogan found. Changes in the lens fibers appear at two weeks after radiation with loss of polarity and vacuolization.

Shepherd discussed the permeability of the red cell membrane to cations and felt that the loss of potassium was fairly closely balanced

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by the intake of sodium. Low temperature storage enhances radiation effect, as little as 400r disturbing the volume and increasing the potassium loss.

Nachmansohn discussed the effect of radiation on nerves. Sodium must be present for the excitation of nerves. X-ray diffraction studies show that in muscle contraction the myosin molecules fold and unfold somewhat in accordion fashion.

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