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Ultraviolet Point Radiation in Production of Developmental Abnormalities in the Chick Embryo.*

MARIE A. HINRICHS.

From the Department of Physiology, University of Chicago.

By means of the apparatus described by Hinrichs, ultraviolet point radiation was used to locally modify the development of chick embryos.[1] At various intervals during incubation, eggs were opened,[2] and the desired region exposed for a given period of time, after which the shell was again sealed shut, and the incubation continued.

Most of the present experiments were made on the developing eye, and results were obtained as follows: (a) inhibition of the rate of development as compared with the unradiated eye, (b) killing of lens tissue, (c) stimulation of rate of pigment formation in the optic cup. The type of effect obtained depended on the dosage and the age of the embryo.

Exposures of the developing brain resulted as follows: short exposure of the forebrain of a 2-day embryo produced a lateral overgrowth on the exposed side. No such effect was obtained in the hindbrain. Longer exposures produced a coagulation of brain tissue. Exposure of the median posterior region of a 2-day embryo caused degeneration of that region.

Even moderate exposures of the heart (40 sec.) produced a slowing of the rate of beat in a 2-day chick, and on subsequent incubation, a loss of contractility of the exposed region.

An interesting condition was brought about following a 45-second exposure of the base of the aortic arches. On the exposed side, the arches atrophied as did also the tissues and organs supplied by them, while on the unradiated side, the arches and vessels were distended, appeared larger than normal, and the organs on that side of the body were completely normal in their development.

It was found that the developing tail and limb buds were relatively non-susceptible to moderate doses (45-60 sec.), while a 90-second exposure produced a coagulation of tissue in the hind limb of a 2-day chick.

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[1] Hinrichs, M. A., PROC. SOC. EXP. BIOL. AND MED., 1930, **27**, 354.

[2] Hinrichs, M. A., *J. Exp. Zool.*, 1927, **47**, 309.

Eighty-five exposures were made, and of these 52% died as the result of either too high a dosage of radiation, of mechanical injuries produced during the operation, or of incomplete closure of the shell so that bacterial infection proved fatal. Forty-one cases remained to undergo partial development. Of these, 5 showed no developmental changes in radiated regions because of too short a period of exposure. Modifications in the other 36 cases were brought about as follows: 43% in the heart and aortic arches, 48% in the eye and forebrain regions, and 9% in tail and limb buds.

While in these experiments mortality is high, due in part to factors other than radiation,[2] nevertheless the method is one well adapted for the localization of injuries during development in such forms as the chick. With the maintenance of a constant dosage, it could be adapted for testing the relative susceptibility of various regions of the embryo at different stages in the developmental period. Certainly, in these experiments, the parts of the nervous system tested, as well as those of the circulatory system, were far more susceptible than such regions as the developing limb buds at a corresponding age.

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Relative Toxicity of Antiseptics on Bacteria and Tissues in Cultures.*

RALPH BUCHSBAUM AND WILLIAM BLOOM.

From the Department of Anatomy, University of Chicago.

Lambert,[1] Lambert and Meyer,[2] and German[3] believe that an ideal antiseptic is one which kills the bacteria without harming the tissue cells and they have accordingly devised methods of comparing the toxic effects of antiseptics upon bacteria and tissue cells *in vitro*.

Lambert after exposing fragments of connective tissue for several minutes to a saline suspension of *Staphylococcus aureus* transferred them into various concentrations of mercuric chloride, po-

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[1] Lambert, R. A., *J. Exp. Med.*, 1916, **24**, 683.

[2] Lambert, R. A., and Meyer, J. R., PROC. SOC. EXP. BIOL. AND MED., 1926, **23**, 429.

[3] German, W. J., *Arch. Surg.*, 1929, **18**, 1920.