The eventual decrease in red cell number during the later part of the post-irradiation period is accompanied by a reciprocal increase in the size. A pronounced increase in the percentage of reticulocytes usually precedes that of the total red count. In 5 experiments the reticulocyte percentage is double, or more than double, that preceding irradiation. Massive exposures (75 to 133 g. cal. per sq. cm.) given at long intervals are usually more effective than are smaller doses repeated more often.

An increase in Hb was noted in only one experiment. In 11 cases the amount of Hb formed during and immediately following the irradiation period was less than in previous or later control periods. In the remaining 8 cases there was no effect. It is to be emphasized that dried peaches, apricots, or lettuce added to the diet of animals which had shown no response to radiation produce their typical influence, although the accelerated Hb regeneration produced by adding these substances to the standard diet was not demonstrably influenced by any dosage of radiant energy. It is further of interest that the changes in reticulocytes and erythrocytes which characteristically follow flaming C arc irradiation of dogs on the standard bread diet are now absent. Irradiation of 6 dogs with the quartz Hg vapor arc (Cooper-Hewitt) gave similar results.

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Ineffectiveness of Radiant Energy on Anemia in White Rats.*

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Young rats placed on a milk diet (12% solution of Klim in distilled water) at about 21 days of age, grow about as well as rats do on the stock, Sherman B, diet and exhibit no evidences of avitaminosis. In 3 to 6 weeks the Hb falls to 4 or 5 gm. per cent, and the red cells to 4 or 5 million in contrast to the usual values at this age of 13 gm. per cent and 8 million. Control experiments indicate that a more severe anemia can be produced by fresh dairy milk. These anemic rats will not breed. Litters have been procured by transferring females to the stock diet and mating them with males that have always been on this diet. When the young are about 21

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days old they are similarly put on the milk diet. The Hb per cent and the number of red cells decrease more rapidly than they did in the first generation. When the low levels are reached some of the animals die, but the majority show a tendency to a slow spontaneous recovery. Hb values of less than 4 gm. per cent are fatal in the majority of cases.

The red cells in this type of anemia vary considerably in size and shape and many of them show polychromatophilia. The average corpuscular volume is 35 cu. microns as compared with 51 cu. microns for the normal red cell, and the saturation is low, 30% as compared to 40% in the normal cell. During the spontaneous recovery the stroma increases more rapidly than the Hb so that in the later stages the saturation is further diminished. An increased resistance of the red cells to hypotonic solutions is a striking and constant feature of this anemia.

Measured doses of radiant energy from quartz mercury vapor and flaming C arc lamps in various quantities and with varying time intervals between them were administered. In some experiments the irradiation was begun as soon as the animals were placed on the milk diet; in others not until a severe anemia had developed. The following groups served as controls: irradiated rats on the stock diet, non-irradiated rats on the stock diet, and non-irradiated rats on the milk diet. The differences in Hb and in red cells in the irradiated and non-irradiated groups were small, being slightly higher in the irradiated groups. The irradiated animals often present a more healthy appearance, and any slight increase in blood levels is referred to an improvement in the general nutritional state of the animal, rather than to direct action on the hemopoietic system. Excessive irradiation in some cases retarded growth but was not observed to have any detrimental effect on the blood.

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Action of Bacteriophage upon Production of in vivo Prepared Toxic Substance of Bacillus Typhosus.*

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In a previous communication[1] we reported the results of the inoculation of guinea pigs with the toxic material obtained from the

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[1] Harris, W. H., and Larimore, O. M., *J. Exp. Med.*, 1928, xlviii, 885.