eration in the degree of dissociation of carbon monoxide hemoglobin can be produced by increase of temperature. The marked break-up of the monoxide hemoglobin through ultraviolet radiation was shown, however, to be entirely independent of the heat waves, inasmuch as in all experiments the effects of radiations on animals were compared with control animals kept in a dark room at the same temperature.

Experiments have been undertaken to determine the relative value of radiations of various wave lengths obtained from the mercury vapor lamp. Furthermore, the finer mechanism of action of ultraviolet rays on carbon monoxide blood has been analyzed by physico-chemical methods by the senior author with the collaboration of Dr. Arthur Grollman of the Chemical Department of this University. The penetration of various rays through the skin and other animal tissues is also being investigated. Full data will be published in due time.

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The effect of ultraviolet, x-ray, and radium radiations on the phytopharmacological reactions of normal blood.

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Phytopharmacological investigations by Macht and various collaborators have brought out the interesting fact that living plant tissues are often more sensitive to poisons and metabolic products of animal origin than living animal tissues are to the same substances. This was found to be especially true of normal as compared with pathological blood specimens, as, for instance, in case of menstrual blood, described by Macht and Lubin elsewhere. It occurred to the authors that possibly by the use of phytopharmacological test preparations certain changes in normal blood might be detected which are not demonstrable by the use of animal tissues or preparations. In the present investi-

gation such a study was made of normal defibrinated pig's blood under ordinary conditions, on the one hand, and after radiation with rays of various wave length on the other hand.

The tests were performed by measuring the growth of living seedlings of the plant *Lupinus albus* immersed in definite nutrient solution with and without admixture of one per cent of blood. Specimens of pig's blood were exposed to the action of ultraviolet rays for periods varying from 10 to 30 minutes, the radiations being performed by means of the Hanovia "Alpine Sun" mercury vapor quartz lamp. Other specimens of blood were x-rayed by one of the authors with broken doses from Coolidge and nitrogen gas tubes for periods varying from 1 to 3 minutes. Finally a few experiments were made with blood treated for one hour with radium emanation of small dosage.

The results obtained were interesting. The toxicity of blood for *Lupinus* seedlings after ultraviolet radiation was unaffected and in some cases was lightly diminished. In case of Roentgen rays the toxicity of blood after radiation was distinctly increased, and a difference was noted between specimens radiated with the two kinds of tubes. Radiation with the Coolidge tube rendered the blood much more toxic for the plants than radiation with the gas tube. The few experiments performed with blood exposed to radium emanation gave results practically the same as those obtained with Roentgen rays; that is, the blood was rendered more toxic for the phytopharmacological preparations. Furthermore, after treatment with radium the blood exhibited a distinct hemolysis.

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Culture filtrates of hemolytic streptococci from scarlet fever: Intracutaneous reactions in test animals.

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A number of substances poisonous for animal cells have been described as appearing in filtrates of young cultures of hemo-