cases reached the maximum from 0.13 to 0.15 per cent. at the end of one hour and in two hours time returned to normal. In hypofunctions of the endocrine system, there was noted practically no increase in the blood sugar; on the contrary hyperfunction of the thyroid produced a pronounced hyperglycemia after the glucose ingestion which persisted for 4 to 5 hours. In the hourly specimens of urine from these cases there was an evident glycuresis, which for a period of 3 hours totaled 1.4 per cent. of the glucose given. These specimens of urine gave positive reactions for sugar with Benedict's qualitative copper solution. The normal cases excreted during 3 hours from 0.1 to 0.2 per cent. of the glucose given and gave negative reactions with the copper reagent.

The diastatic activity of the blood was found to be decreased in dyspituitarism, acromegaly and Addison's disease, but in hyperthyroidism there was a distinct increase ranging from 20 to 34, except in 2 very early cases.

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## The influence of systemic changes on local tissue reactions.

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In order to explain the occurrence of a massive, brawny edema at the site of operative wounds in sensitized, reinjected dogs, the following working hypothesis was formed: Sensitized animals which have circulating ineffective amounts of the antigen, may react locally with anaphylactic changes if through any mechanism (for example, by inflammation and edema) an effective dose of the antigen accumulates in those tissues.

This conception was then tested experimentally in the rabbit.

Rabbits were sensitized by four muscular and intraperitoneal injections of 4 c.c. horse serum at 4 to 5 day intervals. 15 to 21 days after the last injection, 10 c.c. of horse serum were given intraperitoneally. 30 to 45 minutes after the reinjection, none of the rabbits having shown any collapse, the hairy surface of the

ear was moistened with 1 c.c. of commercial xylol in order to produce irritation and edema.

Two groups of control experiments were carried out. In the first group, each normal rabbit received 10 c.c. of horse serum intraperitoneally and after 30 to 45 minutes the ear was treated with the same kind and amount of xylol. In the second group of controls no horse serum was administered, merely one ear was treated with xylol.

The results were strikingly different and support the working hypothesis. In a great majority of the 36 *controls* edema of a fair to good degree developed in six hours; it was generally less in 24 hours, and after 48 hours had largely disappeared, leaving a practically normal ear. No dermatitis with blisters and crusts was observed; nor were hemorrhages or gangrene seen except once among the controls. In this instance the loss of substance was not more than one half millimeter of the ear tip.

In the *sensitized* series (17 rabbits) the edema of the ear developed more slowly and less frequently than among the controls. The maximum was reached generally in 24 hours, and the subsidence was slow, lasting 5 to 9 days. Within 22 to 48 hours, numerous small hemorrhages, blisters and subsequent crusts appeared. In these rabbits (10 out of 17) the ear after a few days showed the picture of an exfoliative dermatitis. This dermatitis involved 1/3 to 1/2 of both surfaces of the ear, healed slowly as the deeper tissues were affected, and always caused dry gangrene of the ear tip. The loss from gangrene varied from 1 to 3 centimeters. Healing was usually complete in three to four weeks. The ear stump was bald at first, but slowly became covered with a new growth of white hair.

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## The selective effect of the accelerator nerves on ventricular systole.

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*Object of Investigation.*—Acceleration of the heart in man is chiefly due to a varying balance of control exerted through the