Many of these experiments have been carried out with the assistance of Miss Alberta Marx, and Mr. Ashton Graybiel, to whom I wish to express my appreciation and thanks.

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Extent of capillary bed and rôle of Thebesian vessels in coronary circulation.

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Intracardiac injections of dyes and of India ink in living cats, rabbits and rats have resulted in complete filling of the capillaries of these hearts. Numerous counts have shown approximately 1100 capillaries to each thousand muscle fibers, or about one capillary to each muscle fiber. But when for any reason the heart dilated during the injection, very few of the capillaries were injected, though the larger vessels were completely injected.

The same results were obtained when human hearts were injected through the coronary arteries. Distension of the chambers prevented injection of the capillaries, but when steps were taken to prevent dilatation of the chambers complete injections were obtained.

At the same time it was noted that perfusion of the coronary arteries in dead hearts resulted in distension of the chambers, and when the walls were so stretched 80 per cent to 90 per cent of the perfusate escaped directly into the chambers of the heart, while only 10 per cent to 20 per cent returned by way of the coronary sinus and veins. These findings suggest that during dilatation of the heart the chief route of blood flow is through the arteries to the Thebesian vessels and thence into the chambers of the heart.

A modification of the Langendorff method of coronary perfusion has given complete injections of the capillaries in cat and rabbit hearts when the hearts were beating strongly. This meth-

od when applied to human hearts obtained within three or four hours post mortem has given complete injection of the capillaries in certain areas of the heart. There is approximately one capillary per muscle fiber in the human heart, except in the auricle where the number is not constant and the supply less abundant.

By the methods described above it has also been possible to obtain good injections of the vessels of the heart valves and of the capillaries in the wall of the aorta. In one instance the vessels in a papillary muscle were seen to anastamose with those coming down from the base of the valve cusp.

Further studies upon the quantitative distribution of capillaries in the heart and upon the function of the Thebesian vessels are now in progress.

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Heterakis vesicularis Frölich 1791: A vector of an infectious disease.

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Several parasites, a flagellate of the genus *Giardia* and also microsporidia have been reported in intestinal round worms, but up to the present time the latter have not been shown to be concerned in the transmission of disease.

Blackhead, an infectious disease of turkeys and other poultry, is caused by a flagellate, *Histomonas meleagridis*. It is transmitted experimentally and to some extent in nature by the direct ingestion of material contaminated with freshly passed discharges containing the protozoon. It appears, however, to be much more frequently transmitted indirectly by some phase distributed on the soil, evidently in association with the eggs of the caecal worm, *H. vesicularis*.

The presence of the protozoon in the egg of *Heterakis* is indicated by experimental evidence of various sorts.