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Effect of Barium Chloride and Ouabain upon the Onset of Ventricular Fibrillation.

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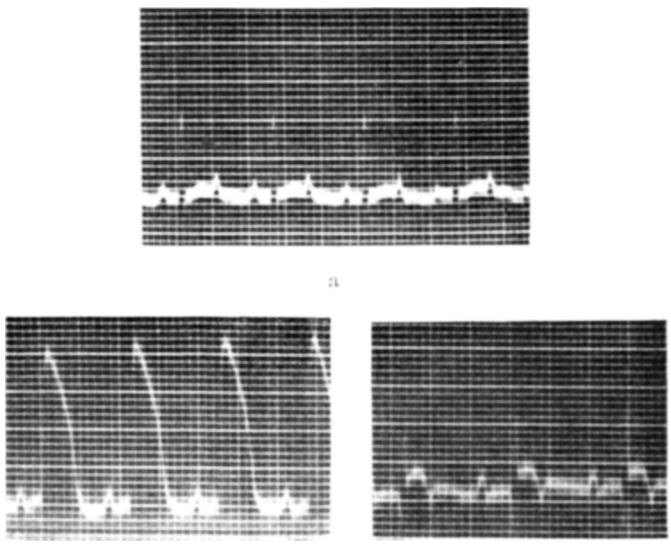
In experiments on dogs subjected to chloretone narcosis, section of the vagus nerves, artificial respiration and the exposure of the heart by removal of the sternum, in which ouabain, 1/3 lethal dose, or barium chloride, ½ mgm. per kilogram, was administered intravenously, it was observed that intense injury to the myocardium did not, as normally, induce the onset of ventricular fibrillation. Rapid excision of the entire cardiac apex, for example, caused no change in the cardiac rhythm (Fig. 1) until exsanguination and asphyxia induced heart block and the cessation of the heart beat, although ventricular fibrillation appeared under the same conditions when either of these drugs was not previously administered. They also proved to be a satisfactory aid in preventing ventricular fibril-

FIG. 1.



b c

a—Electrocardiogram—axial lead. Time in 25th seconds. *b* and *c*—after excision of the entire cardiac apex (the lower third of the heart). *b* is the axial lead and *c* the transverse lead.

[1] Gold, H., *Arch. Int. Med.*, 1925, xxxv, 482.

lation, which is prone to occur after frequent injection of saline solution into the myocardium.

Gold[1] has found that the fatal dose of ouabain is not lessened by ligating the coronary arteries in the cat, and therefore there is no experimental evidence that an increase in the predisposition to ventricular fibrillation by the administration of the drug in the human exists when coronary artery closure has occurred. The effect reported here suggests an explanation for this fact and indicates that the action of digitalis in therapeutic doses is one which tends to prevent the onset of ventricular fibrillation when conditions predisposing to it are present, and that the administration of the drug is advisable where the onset of ventricular fibrillation is feared.

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Effect of Altering Venous Inflow to the Heart on the Voltage of the Electrocardiogram.

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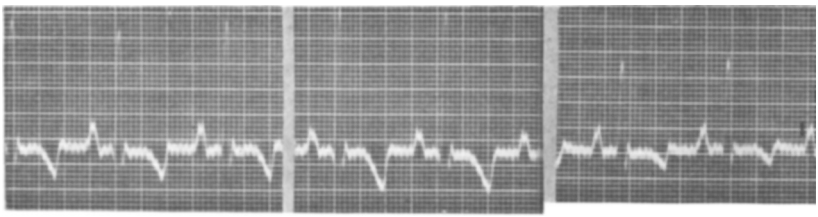
It is known that great alteration in the heart rate tends to alter the form of the electrocardiogram; it becomes smaller with rapid rates of beating and larger when the rate is decreased. This relation between heart rate and voltage is independent of the extracardial nerves; it occurs in the denervated heart.

In the heart of the dog, exposed by removing the sternum after narcosis with chloretone, section of the vagi and the institution of artificial respiration, clamping the *vena cavae* is associated with a

FIG. 1.



a b c

Axial electrocardiogram. Time in 50th seconds. *a*—normal; *b*—effect of the rapid infusion of saline solution into the superior *vena cava; c*—effect of clamping the *vena cavae.*