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Effect of Digitalis Administration on Experimental Hypertrophy.*

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The experimental studies that have been cited in support[1] of the contention that digitalis administration inhibits or retards the development of cardiac hypertrophy under conditions which usually bring it about, are not conclusive. Cloetta's[2] conclusions are open to criticism, because too small a number of experimental animals were used and because the doses of digitalis administered to his animals were much greater than humans could possibly tolerate.

It was therefore considered desirable to repeat the studies obviating as nearly as possible these criticisms. In order to accomplish these ends some 200 rabbits have been operated upon with the carotid valvulotome for the production of experimental aortic regurgitation. A total of 60 animals with aortic regurgitation survived for 3 weeks or more and approximately two-thirds of the rabbits were given by intramuscular injection, 0.1 and 0.3 cat unit per kilo of digalen, digifoline, and digiglusin twice weekly. This dosage was calculated to maintain digitalization.

Of 17 rabbits in which only small lesions, merely the perforation of one valve cusp, had been accomplished, 11 had been digitalized and 6 had received no drug. Only slight hypertrophy was established in the hearts of these animals. No difference was noted in the untreated and treated rabbits.

In 43 rabbits one or more cusps were destroyed and considerable cardiac hypertrophy had been produced. Digitalization was carried out in 26 of these animals with aortic regurgitation for 30 to 147 days with an average of 94 days. The 17 non-treated rabbits with experimental aortic regurgitation were sacrificed after 38 to 104 days, an average of 92 days. The details of the findings are shown in the diagram. The normal HW/BW was previously established to be 0.197.[3]

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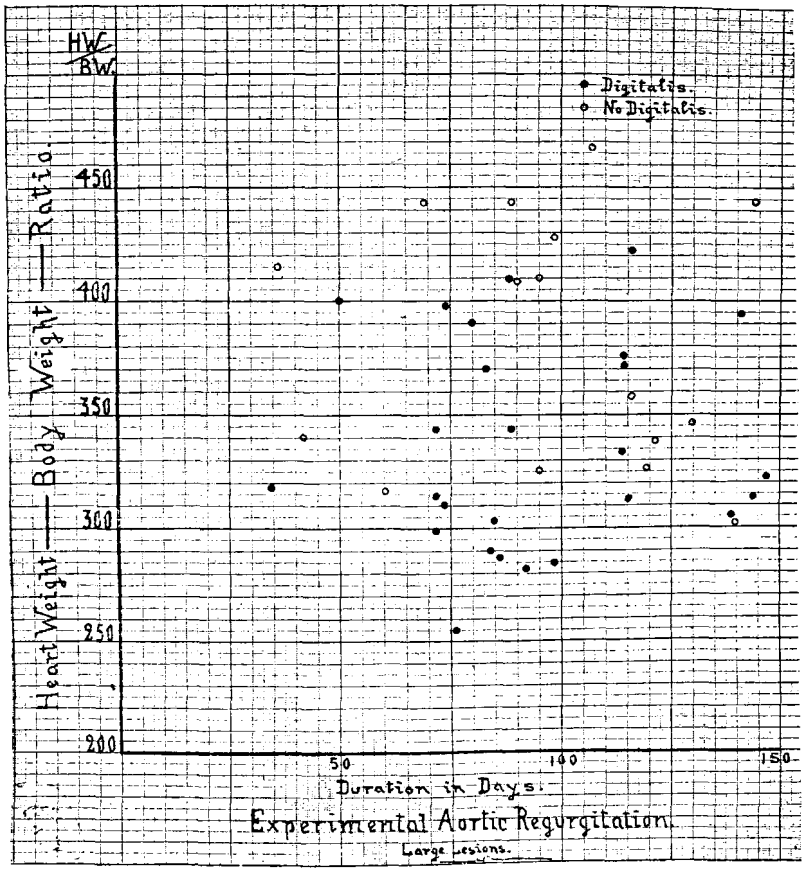
1 Christian, Henry A., *J. A. M. A.*, 1933, **100**, 789.

2 Cloetta, Max, *Arch. f. exp. Path. u. Pharmakol.*, 1908, **59**, 209.

3 Herrmann, G., Decherd, G., Erhard, P., and Schwab, E. H., PROC. SOC. EXP. BIOL. AND MED., 1935, **33**, 409.



The difference between the mean values of HW/BW ratios for the non-digitalized and the digitalized groups is statistically significant according to the method of Fisher, section 24, 1. The probability of the chance occurrence of this difference is less than 0.01. Although our results are not nearly so striking as those of Cloetta, the evidence seems to indicate that digitalis does have some restraining effect on the development of cardiac hypertrophy. Nevertheless we feel that a still larger series of animals should be similarly studied.