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Electrographic Studies of Conductivity in Cardiac Muscle.

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This abstract presents the results of studies with the string galvanometer which confirm and extend previous observations[1] upon the recovery of conductivity, and the effect of the blocked impulse upon subsequent conduction in the quiescent, excised, atropinized turtle heart. The previous work was with the kymograph.

The observations were incidental to experiments directed toward other ends. They are based upon studies of approximately 30 turtle hearts, from some 15 of which simultaneous myograms and electrograms were obtained. These demonstrate that although the electrical and mechanical conduction intervals may not appear identical, the curves illustrating the recovery of conductivity are parallel. The electrical are more accurate than the mechanical.

The results fall into three divisions. (1) Curves illustrating the recovery of conductivity between auricle and ventricle, with and without compression at the A-V groove. These are similar to those already published,[1] excepting that in some the deviation of the individual points from a smooth curve is less pronounced. They demonstrate that not only are conduction times for all rest intervals increased by compression, but also that the curve returns much less promptly to a resting level. A recovery curve for the human heart was reported by Ashman and Herrmann.[2] (2) Confirmation of the fact that a very premature blocked impulse may have no detectable influence upon the conduction time of a subsequent impulse; that a slightly later blocked impulse has a moderate effect; and that an impulse arriving at the compressed muscle so late as to just fail of transmission to the ventricle, has, on the average, 65 per cent

as great an effect as a transmitted impulse. These results are identical with those previously reported. A similar phenomenon has been reported by Lewis and Master[3] for the mammalian heart. (3) Demonstration that the duration of the refractory period preceding any given auricular impulse determines the velocity with which it will be conducted, or, if blocked, its effect upon subsequent conduction. Thus, if the auricular cycle preceding that terminated by the impulse in question is short, so that the impulse is preceded by a short refractory phase, the velocity of transmission is greater than had the antecedent cycle been long. This result, which is most marked with no or slight compression, confirms that found by Lewis and Master for the mammalian heart. If the cycle antecedent to an auricular cycle terminated by a blocked impulse is short, the effect of the blocked impulse upon subsequent conduction is greater than had the antecedent cycle been long.

[1] Ashman, R., *Am. J. Physiol.*, 1925, lxxiv, 121.
[2] Ashman, R., and Herrmann, G. R., *Am. Heart J.*, 1926, i, 594.
[3] Lewis, T., and Master, A. M., *Heart* (London), 1925, xii, 209.

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Factors in the Metabolism of Galactose.

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While there are as yet no satisfactory chemical methods available for the rapid determination of galactose in blood, the resistance of this sugar to fermentation by yeast offers a means for the approximate estimation of the amount of this substance present in the blood following its administration. As in the determination of pentoses, previously described,[1, 2] it has been assumed that the difference between the total non-fermented reduction of the blood and the usual rather constant residual reduction gives a measure of the amount of galactose present.

The details of this series of experiments may be summarized as follows: The sugar (or sugars) in aqueous solution was injected into the marginal ear vein of a fasting, medium sized (about 2 kilos), male rabbit. Blood samples were taken before, and at