Plant and Miller[1] reported observations that both in the dog and man, morphine produces an increase in intestinal tone and an increased frequency of contractions, contradicting the current conception that morphine decreases intestinal activity.

Because of the relatively established position of the use of morphine in the treatment of peritonitis it was of interest to determine if the existence of a peritonitis modified the type of response to the usual therapeutic doses.

Peritonitis was produced in 10 dogs by the injection of fecal emulsions or by allowing a segment of intestine to drain into the peritoneal cavity. Intestinal motility was recorded from a balloon placed either in a Thiery-Vella fistula or in the intestinal tract. In every instance the subcutaneous injection of 10 mg. of morphine sulphate produced an augmentation of intestinal activity which was not antagonized by atropine sulphate, except in 2 instances in which during the 12 hours preceding death, spontaneous movements were absent and the intestine failed to respond to either morphine or physostigmine. Observations on 4 cases of peritonitis at the Cook County Hospital have all indicated increased intestinal motility after morphine sulphate, as determined by auscultation of the abdomen with a stethoscope before and after its administration. If it can be assumed that the general use of morphine in the treatment of peritonitis warrants the statement that its administration is beneficial, the interpretation of its beneficial action must be on some other basis than that of abolishing intestinal activity and putting the intestine at rest.

5674

Ultraviolet Point Radiation in the Production of Arrythmias in the Heart of the Chick Embryo.*

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By means of apparatus previously described,[1] a point source of radiation could be directed on the desired spot on the developing

[1] Plant, O. H., and Miller, G. H., *J. Pharm. and Exp. Therap.*, 1926, **27**, 361.

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[1] Hinrichs, M. A., PROC. SOC. EXP. BIOL. AND MED., 1930, **27**, 354.

embryonic heart and its effect on the rhythm noted. Studies were made on embryos varying in age from 2 to 20 days, and the following results obtained: Short exposures of the sinus region of the heart produced an increase in rate of beat within 30 seconds after the exposure was begun. A long-continued exposure slowed the rate. Exposure on the ventral aspect of either auricle (at a point of visible condensation of tissue) also produced a marked increase. Exposure of the ventricle did not change the rate of beat except when the point of the quartz rod was placed on the interventricular septum at the base of the auricles. A slight increase was then obtained in hearts whose rate had already been slowed.

Also, in young hearts (2 to 6 days old), it was possible to obtain complete reversal of the direction of beat by a preliminary slowing brought about by lowering the temperature, and then radiating the ventricle or bulbus region.

The normal sequence of the heart cycle may be changed by radiating the sinus or auricle. When a heart has already slowed its rate of beat following continued exposure, a 1:1 auricular-ventricular rhythm may be gradually changed to a 2:1, and then a 3:1, and so on. (A 5:1 ratio was maintained in one heart for several minutes before a further change was produced.) In some cases it was possible to obliterate the ventricular beat entirely, while in others the sinus alone remained beating. Partial or complete heart block can be produced.

Ectopic beats of auricular origin have been obtained by local stimulation of the auricle.

Twenty-six hearts were studied in this way, and in every case it was possible to modify the rate of beat or its rhythm, depending on the dosage used, and on the location of the point of the quartz rod on the heart. Tachycardia and bradycardia were studied in 11 cases, arrhythmias were produced in 10 hearts, while in 5 young embryos it was possible to reverse the direction of beat completely.

Heart rhythms may thus be varied by producing a local change in physiological activity, and the effect may or may not be transmitted to other regions of the heart depending on the condition of (a) the region radiated, (b) the transmitting tissue, and (c) the remaining heart tissue.