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**Action of Pilocarpine and Atropine on Uterine Fistulae in the Unanesthetized Rabbit.**

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The effect of pilocarpine and atropine on the uterine fistula of the unanesthetized rabbit has been observed. The data include observations of 18 injections of pilocarpine and 14 injections of atropine on 5 rabbits over several different days. The method of recording such motility has been described.<sup>1, 2</sup> Adult female rabbits (albino, chinchilla and brown) were castrated at the time of operation. On the day prior to the experiment, 25-50 r.u. of oestrin (Theelin; Theelol from Parke, Davis and Co.) were administered when marked motility was desired.<sup>3</sup> When quiescence was desired, the castrated rabbit was untreated.<sup>3</sup> The effects noted are as follows:

*Pilocarpine-HCl.* When pre-injection motility is rhythmical in character and of marked amplitude, pilocarpine (0.6-6 mg.) administered intravenously promptly elicits a sustained contraction lasting one to 4 or more minutes. The contractions which follow are frequently of greater duration and increased frequency. The amplitude of these contractions seems not to be regularly affected. When the uterus is relatively quiescent, as recorded by the balloon method, pilocarpine is without effect, or else it elicits a feeble sustained contraction. It is the impression of the observer that when this takes place it occurs in association with other effects of the pilocarpine (cyanosis and pulmonary distress). The non-responsiveness of the quiescent uterine fistula to pilocarpine is similar to its non-responsiveness to posterior pituitary extracts<sup>4</sup> and in anaphylactic shock.<sup>5</sup> Epinephrine, however, does elicit a sustained uterine contraction of the quiescent uterine fistula.

*Atropine-sulphate.* This drug (1-5 mg.) by itself has no observable effect on either the contracting or quiescent uterine fistula. Its action is limited to (a) preventing a response to subsequent ad-

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<sup>1</sup> Reynolds, S. R. M., *Am. J. Physiol.*, 1930, **92**, 420.

<sup>2</sup> Reynolds, S. R. M., and Friedman, M. H., *Am. J. Physiol.*, 1930, **94**, 696.

<sup>3</sup> Reynolds, S. R. M., *Am. J. Physiol.*, 1931, **97**, 706.

<sup>4</sup> Reynolds, S. R. M., *Am. J. Physiol.*, 1930, **92**, 430.

<sup>5</sup> Weinstein, G. L., Reynolds, S. R. M., and Friedman, M. H., *Am. J. Physiol.*, 1931, **98**, 237.

ministrations of pilocarpine (the duration of this antagonism varied from 9 minutes in one instance to 30 minutes in another); (b) causing relaxation of a uterus already contracted under the influence of pilocarpine. It was repeatedly observed that at the time pilocarpine was inhibited by atropine the uterus responded to epinephrine (0.5-1 cc., 1:50,000) and posterior pituitary extract (0.1-0.5 cc., Parke, Davis).

The present results differ from those which Cushny<sup>6</sup> obtained on anesthetized (paraldehyde) rabbits and cats in that when we observed a feeble sustained contraction of the quiescent uterus following pilocarpine, atropine had no antagonistic action on such a contraction, whereas it did in the experiments described by him. It is suggestive in our experiments, therefore, that the contraction of the quiescent uterus seen by us is only secondarily related to the injection of pilocarpine. Certainly, without concomitant pulmonary distress pilocarpine has not, in our experience, elicited a contraction of the quiescent uterus.

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### Oxygen and Carbon Dioxide Dissociation Studies on Blood Drawn after Intravenous Injection of Pitressin.\*

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In previous communications<sup>1, 2, 3</sup> it was pointed out that certain well defined circulatory and respiratory changes are elicited by the intravenous injection of moderate doses of pituitrin or pitressin into unanesthetized human beings or dogs. For a brief period (5 to 10 minutes) immediately following the administration of the drugs, the venous blood draining the limbs becomes arterial in

<sup>6</sup> Cushny, A. R., *J. Physiol.*, 1906, **35**, 1.

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<sup>1</sup> Geiling, E. M. K., and DeLawder, A. M., *Bull. Johns Hopkins Hosp.*, 1932, **51**, 1.

<sup>2</sup> Geiling, E. M. K., and DeLawder, A. M., *Bull. Johns Hopkins Hosp.*, 1932, **51**, 335.

<sup>3</sup> Grollman, Arthur, and Geiling, E. M. K., *J. Pharmacol. and Exp. Therap.*, 1932, **46**, 447.