in concentration of 1:250,000 to 1:50,000 or even 1:25,000. The blood probably contained, therefore, a substance (or substances) that modified the action of ergotamine.

We are very much indebted to Mr. Eugene Marti of the Sandoz Company for a generous supply of ergotamine, gratis, used in this and other experiments by the writer.

4752

The Reversal of Action of Ergotamine by Calcium and Changes in C_H.

WILLIAM SALANT AND HAROLD NAGLER.

From the Biological Laboratory, Cold Spring Harbor, L. I., N. Y.

As stated in the preceding communication,[1] the response of the intestine to ergotamine has been studied in different animals. No observations have been made, however, to determine whether changes in ionic content of the surrounding medium modified the action of ergotamine. We, therefore, undertook the investigation of this problem and selected the intestine of the rat for the test object. As far as we know, no studies with ergotamine on the intestine of this animal have been reported. The experiments of Rosenmann,[2] however, are of interest in this connection. He observed that ergotoxin produced stimulation in the isolated intestine of the rat.

Our experiments were carried out by means of the Magnus method, segments of different parts of the intestine being suspended in oxygenated Locke solution maintained at almost uniform temperature, usually 37.5° C. The variations which sometimes occurred seldom exceeded 0.2° C. We found that concentrations of 1:100,000 and sometimes 1:1,000,000 ergotamine in Locke solution with a pH of about 7.2 or 7.3 and containing 0.014% calcium chloride, produced a considerable decrease of tonus, the relaxation being more marked in the ileum and colon than in the duodenum. The rhythmic movements, however, were usually stimulated, especially the amplitude. When the amount of calcium in the solution was increased to 0.028 or 0.056% a striking change in the action of ergotamine occurred when the H-ion concentration was decreased below neutral-

[1] Salant, William, PROC. SOC. EXP. BIOL. AND MED., 1930, xxvii, —?

[2] Rosenmann, *Z. f. i. ges. Exp. Med.*, 1922, xxix, 334.

ity, especially when it was around pH of 6.5. The same amounts of ergotamine now caused a very marked increase of tonus which occurred within a few seconds after it was added to the solution. The duration of the effect varied in different experiments, but it usually lasted several minutes or longer. The rhythmic contractions were also increased in some cases, but they occasionally remained unchanged. The results obtained were different when the pH was raised to 7.5 or 8.0, the calcium content being 0.028 to 0.056% or more. The same amounts of ergotamine as before caused little stimulation and often failed to produce any change or even caused moderate depression of the intestine. We also made the observation

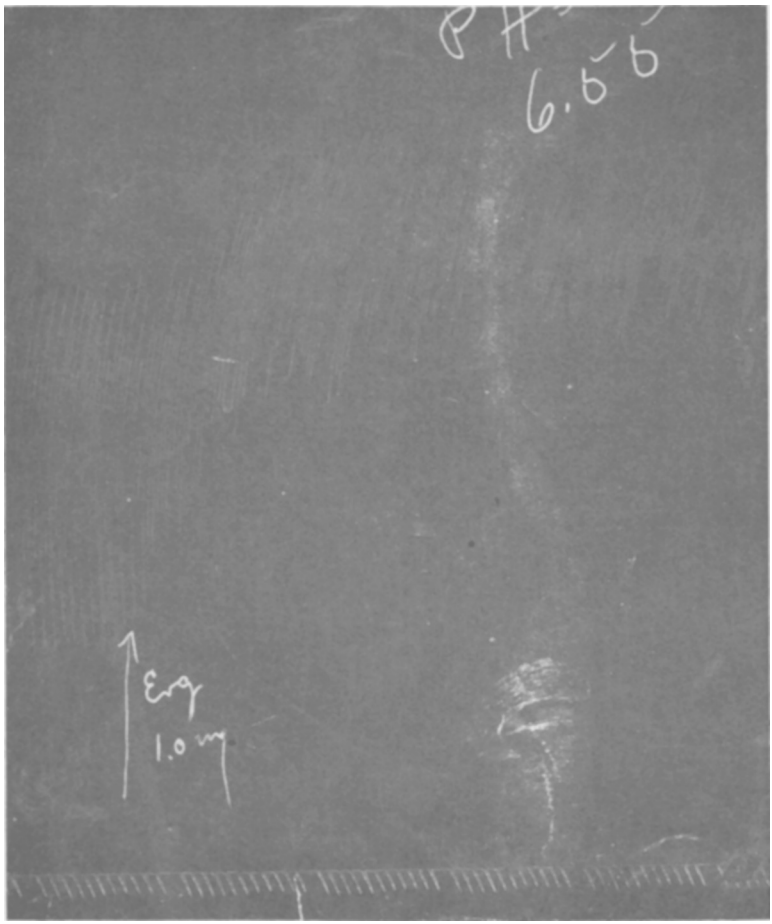

FIG. 1 A

A. Duodenum of rat in Locke's solution containing 0.028% calcium chloride, pH 6.55, Ergotamine 1:100,000 produced stimulation.

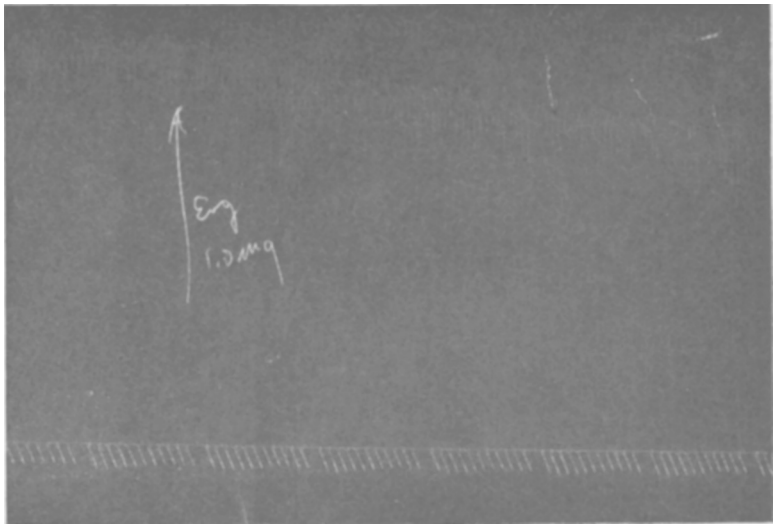

FIG. 1 B

B. Duodenum of rat in Locke's solution containing 0.014% calcium chloride, pH 6.78, Ergotamine 1:100,000 produced depression.

that the response was different in the duodenum and ileum. Higher concentration of calcium—about 0.056% or more—and smaller amounts of ergotamine were required to produce reversal by ergotamine similar to that obtained in the duodenum.

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Anterior Lobe of the Pig and the Monkey Ovary.

CARL G. HARTMAN. (Introduced by H. D. Senior.)

From the Carnegie Laboratory of Embryology, Baltimore.

The Smith and Engle phenomenon, first demonstrated in the rat, has been extended to other laboratory mammals. E. Allen induced sudden stimulation of the ovaries and genital tract in an immature rhesus female by means of implants of anterior lobe from 3 spayed females of the same monkey species. He also found that dog hypophysis had no effect.[1] It is, therefore, of interest to report a striking effect of pig anterior lobe upon a non-ovulating and amenorheic monkey.

A preliminary experiment was done with the glands implanted

[1] Allen, E., *Anat. Rec.*, 1928, xxxix, 315.