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### Reciprocal Activity of the Muscle Coats of Guinea Pig Intestine.

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Some years ago, Gayda<sup>1</sup> reported a coordinated reciprocal activity of the muscle coats of guinea pig intestine, but his work received little notice. More recently, Hanzlik and Butt<sup>2</sup> have shown a similar mechanism in the crop of the pigeon. Using Gayda's modification of the Trendelenberg method,<sup>3</sup> and a further modification to prevent pressure changes in the lumen of the gut, I have been able to confirm the above workers, in that 19 of 26 segments exhibited the reciprocal activity of the 2 main muscle coats; *i. e.*, contraction of the longitudinal muscle was accompanied by relaxation of the circular muscle, and vice versa. Four of the remaining 7 segments developed reciprocal activity after treatment with atropine and nicotine. The effects were the same for duodenum, jejunum, and ileum and occurred in segments from each of 7 animals. Furthermore, the reciprocal activity of the muscle coats of the small intestine was evident during the action of epinephrine, pilocarpine and barium chloride. For example, epinephrine relaxed the circular muscle and increased the tone of the longitudinal muscle; barium chloride and pilocarpine produced relaxation of the longitudinal muscle and contraction of the circular. The action of epinephrine and of barium chloride is shown in Fig. 1.

<sup>1</sup> Gayda, T., *Arch. f. d. ges. Physiol.*, 1913, cli, 407.

<sup>2</sup> Hanzlik, P. J., and Butt, E. M., *Am. J. Physiol.*, 1928, lxxxv, 271.

<sup>3</sup> Trendelenberg, P., *Arch. exp. Path. Pharm.*, 1917, lxxxi, 55.

### MUSCLE COATS OF INTESTINE

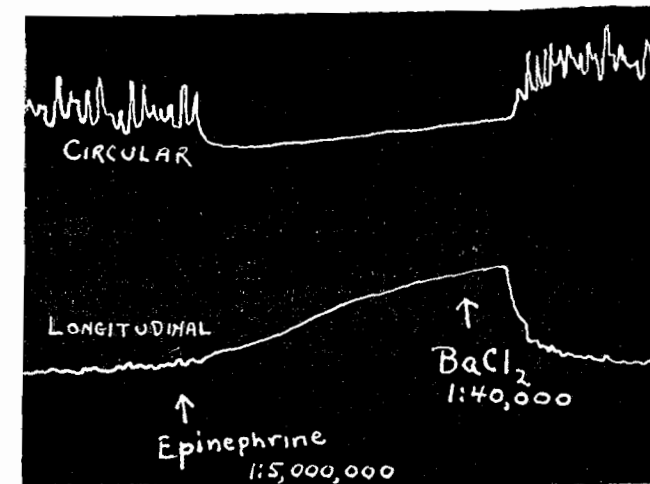


FIG. 1.

Reciprocal response of the muscle coats of the intestine to epinephrine and barium.