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THE ROLE OF THE VAGI ON GASTRIC MOTILITY IN
NECTURUS MACULATUS

T. L. PATTERSON

Previous work¹ on the movements of the empty stomach of the *Necturus* has indicated that the controlling influence of the vagi is largely inhibitory. This phenomenon is contrary to that which exists in the stomachs of higher animals, although it has been shown by Hopf² for the frog and by Bercovitz and Rogers³ for the turtle that the tenth nerve contains both motor and inhibitory nerve fibres to the stomach with the motor predominating, at least in the frog.

The method used for the study of this problem consisted of transecting the spinal cord between the first and second cervical vertebra under ether anaesthesia followed immediately by a stomostomy operation⁴ near the angle of the mandible for the introduction of the rubber balloon into the stomach via mouth and esophagus for the recording of the gastric contractions. This procedure was then followed by isolation of the vagi, dorsally and near their exit from the cranium for a distance of 3 to 5 mm. Lifting ligatures were then placed under each nerve. By the development of careful technique it is possible to isolate these nerves without hemorrhage. The incisions were plugged with cotton moistened with normal saline and the animals dorsal side up were placed on a specially constructed water trough, whereby the gills were constantly covered with running water, both from above and below (see illustration). Under these conditions, respiration and circulation could be fairly normally maintained for periods ranging from three to five days during which time the effect of the vagi on the stomach could be determined. Stimulation of the vagi, even slight traction produced inhibition or stoppage of the movements of the empty stomach. Ligaturing and sectioning of both vagi first produced inhibition of the gastric movements (due to mechanical stimulation) followed in a short time by the return of the gastric contractions in augmented form, the augmentation even greatly exceeding the normal contractions with the nerves intact. These findings tend to show, therefore, that the fibres contained in the vago-sympathetics and destined for

the stomach of this particular animal are largely if not entirely, inhibitory. A few facts have been adduced which indicate that the motor nerve supply to the stomach is via sympathetic, and at the present time attempts are being made to further investigate this phase of the problem.

REFERENCES

1. Patterson, American Journal of Physiology, LV, p. 283, 1921.
2. Hopf, Zeitschrift für Biologie, Bd. 55, S. 409, 1910-11.
3. Bercovitz and Rogers, American Journal of Physiology, LV, p. 323, 1921.
4. Patterson, Journal of Laboratory and Clinical Medicine, V, p. 674, 1920.

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Fig. 1. Illustrates arrangement of apparatus for determining the influence of the vagi on gastric activity in *Necturus*. TWF, rubber tube from water faucet. TT, glass T-tubes. WT, water troughs for lower portion of gills. AH, animal holder, OT, outlet tubes. TM, tube to manometer with balloon attached at opposite end, the latter being introduced into the stomach through a stomostomy opening in the floor of the mouth (not shown). CTTG, curved T-tube to keep upper portion of gills moist. IV, Incisions for vagi. ITC, incision for transecting cord. Th, thermometer. L, ligatures attached to vagi. S, support for apparatus. C, clamp to regulate flow of water in tubes.