SCIENTIFIC PROCEEDINGS

ABSTRACTS OF COMMUNICATIONS.

Seventy-fifth meeting.

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67 (1131).

An active expiratory muscle in the chicken which is inhibited by stimulation of the central end of the vagus. A demonstration.

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In mammals expiration is passive under ordinary conditions. It is only under abnormal conditions that certain muscles become active during the expiratory phase of respiration. At the last meeting of the Federation of American Societies for Experimental Biology[1] we made the statement that in the fowl normal expiration is active. We wish to demonstrate the truth of this statement by a graphic method. We have found that the innermost of the abdominal muscles in the chicken when carefully isolated contracts regularly with each expiration. When the contractions of this muscle are recorded simultaneously with the movements of the thorax it will be observed that the muscle contracts during expiration and suddenly relaxes during the onset of inspiration.

The literature concerning the effect upon the respiration of stimulation of the central end of the vagus in mammals is very extensive and full of conflicting opinion as to the nature of this effect. In fowls stimulation of the central end of the vagus causes an unmistakable inhibition of the contractions of this muscle. When the movements of the thorax and the contractions of the

[1] *American Jour. of Physiology* (Proceedings), 1916, 40 (No. 1), 127.

expiratory muscle are registered simultaneously, stimulation of the central end of the vagus brings out an instructive picture. Throughout the period of stimulation the thorax remains quiescent in an inspiratory position, while the expiratory muscle remains completely relaxed.

This phenomenon is another instance of the general law of "contrary innervation" (Meltzer), or "reciprocal innervation" (Sherrington). Inhibition of the expiratory group of muscles during inspiration was suggested by one of us over thirty years ago.[1]

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A demonstration of the effects of some lesions of the nervous system.

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The effects of the lesions were shown in cinematograph films of three different animals. A rabbit which was brought into the laboratory some months ago presented constant marked torsion of the head to the *left*. There was no nystagmus, but merely a constant deviation of the eyes. The animal could move about on rough surfaces if it went slowly and carefully, or if its left side was supported by the side of the cage. If put on a smooth surface with the left side unsupported, any attempt on the part of the animal to move was followed by rolling movements to the left, about the long axis of the body. If no obstacle was placed in its way, the animal might roll for several yards before regaining its upright position. The animal was said to be about eight months old at the time it was brought into the laboratory, and to have been in the same condition from birth. The only gross changes visible at autopsy were in the left otic labyrinth. The nature of these changes was not determined by inspection. The histological report will be presented later. One interesting point in the deportment of the rabbit was its lack of compensation for the loss

[1] *Arch. für Physiol.* (DuBois-Reymond's) 1883, 216.