TABLE II.
Effect of intravenous hypertonic 10 cc. 5% NaCl on propulsive motility of a Thiry-Vella fistula of the jejunum.

Dog No.	Oct. 21, 1931 Normal Time	After NaCl	Latent period or NaCl effect	Oct. 25, 1931 Normal Time	After NaCl	Latent period or NaCl effect	Oct. 28, 1931 Norm. Time	After NaCl
	min.	min.	min.	min.	min.	min.	min.	min.
1	4	4	—	4	4	—	4	4
2	30 to go ½ way	4	6	10	5	6	7	4
3	"	4-6	7	20	10	6	12	10
4	"	8	6-8	15	10	6	13	11

It might be said that, in this dog, propulsive motility was maximum and hence could not be influenced by the salt solution. That this explanation is probable, is supported by the fact that the effect of the injection of salt solution lasts at least one week, and that an injection of salt solution during this period failed to cause a marked increase in propulsive motility.

In regard to the action of the hypertonic salt solution on the motility of the colon and stomach, we can only at this time state that it does not cause defecation, and that it increases the tone and motility of the stomach as recorded by a balloon. In order to answer this question specifically, study is under way to determine the effect of hypertonic sodium chloride solution on the evacuation time of the colon and stomach.

Conclusion. The intravenous injection of 10 cc. of 5% NaCl solution increases the propulsive type of motility of a jejunal loop when the loop is manifesting subnormal propulsive motility.

5808

Observations on the Metabolism of the Tapeworm, Moniezia Expansa.

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The association of the tapeworm with an Addisonian type of anemia in the human has been repeatedly described. The tapeworm may destroy a specific nitrogenous substance necessary for blood regeneration.[1] Observations on the respiration and fermentation of

[1] West, Randolph and Howe, Marion, *J. Am. Med. Assn.*, 1931, **97**, 685.

various portions of the sheep tapeworm are reported here preliminary to further studies on the protein metabolism of tapeworms pathogenic to man.

Observations on the respiration, respiratory quotient, and anaerobic and aerobic acid formation of the sheep tapeworm were made, using the technique of Warburg.[2] Small quantities (2 to 40 mg. dry weight)* of the head portion, and of the mature and gravid proglottides were studied in phosphate-Ringer or bicarbonate-Ringer solution with 0.2% glucose at a pH of 7.4 and at 37.5°C.

The oxygen consumption decreased for the first 2 hours and then assumed a constant value which continued as long as readings were made (4 to 5 hours). The initial values were about twice those of the values during the steady state. The average values for the QO_2 in 8 experiments during the steady state were 1.1 for the head portion, 0.9 for the mature proglottides, and 0.6 for the gravid proglottides. Oxygen consumption was the same under the following conditions: in 100% oxygen, in room air, in solutions with and without glucose, in an intact portion of the worm as compared with an equal adjacent portion when divided into several groups of proglottides.

Four determinations of the respiratory quotient during the first hour gave values of 1.21 and 0.90 for the mature proglottides and 1.00 and 1.16 for the gravid proglottides. The technique was exactly as outlined by Richardson[3] except that 10% citric acid was used to liberate the carbon dioxide. Accurate values could not be obtained because of the relatively small oxygen consumption as compared with the large amount of bound carbon dioxide in the worm.

The anaerobic acid formation of the mature and gravid proglottides was constant for the first 1½ to 2 hours and then decreased slightly for the following 2 hours. The average $Q_{CO_2}^{N_2}$ in 9 experiments was 5.2 for the mature and 3.8 for the gravid proglottides. The initial $Q_{CO_2}^{N_2}$ of 9.4 for the head portion fell and reached a constant of 5.9 at the end of the second hour. This is explained by the fact that the head portion (about 15 cm. long) which was very motile at first, tied itself into knots and became relatively immotile. When glucose was omitted from the media, there was a decrease in

[2] Warburg, Otto, *Über den Stoffwechsel der Tumoren*, 1926, J. Springer, Berlin.

* The dry weight is approximately 10% of the moist weight.

[3] Richardson, H. B., *Physiol. Rev.*, 1929, **9**, 61.

acid formation after the second hour in the case of the mature and gravid proglottides. In the case of the head portion, the decrease in acid formation was noticed after the first half hour. The acid formation was the same in an intact portion of worm as in an equal adjacent portion when divided into several groups of proglottides.

The acid formation is practically the same either in presence of a 95% oxygen mixture or in absence of oxygen. The table shows the result of a typical experiment, performed in rectangular vessels by the improved method of Warburg.[2]

TABLE I. *Mature Proglottides.*

min.	QO_2	$Q\,\frac{O_2}{CO_2}$	$Q\,\frac{N_2}{CO_2}$
30	—2.8	+4.2	+4.0
30	—2.8	+3.9	+3.9
30	—2.0	+3.6	+3.9

QO_2 = cmm. of O_2 consumed per mg. of dried worm per hour.

$Q\,\frac{O_2}{CO_2}$ = cmm. of extra CO_2 liberated per mg. per hour in oxygen.

$Q\,\frac{N_2}{CO_2}$ = cmm. of CO_2 liberated per mg. per hour in nitrogen.

It has been found that lactic acid and fatty acids, in almost equal quantities make up the majority of the acids produced in the metabolism of the sheep tapeworm.[4,5] Small amounts of succinic acid[5] and oxalic acid[6] have also been reported.

5809

A Correlation Study of Vasomotor and Muscle Tonus Response to Sympathetic Ganglionectomy.

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The theory of dual motor innervation of striated muscle suggested by the histological studies of Boeck[1] and supported by the physiological observations of DeBoer[2] and Langelaan[3] has led to considerable

[4] Tischer, O. A., unpublished work.

[5] Brandt, T., *Verhandl. d. deutsch, zoolog. Gesellschaft*, 1929.

[6] Loeper, M., and Tonnet, J., *Comp. rend. Soc. de biol.*, 1931, **106**, 716.

[1] Boeke, J., *Brain*, 1921, **44**, 1.

[2] Boer, S. de, *Folia Neuro-biol.*, 1913, **7**, 378.

[3] Langelaan, J. W., *Brain*, 1915, **38**, 235.