Subject	Diagnosis	Daily vitamin B_1 treatment	Amt of vitamin B_1 in 24-hour urine sample γ
		.5 mg i.m.	50
		"	25
		"	50
		"	30
		"	50
		1 mg i.m.	50
		"	120
		0	15
		1 mg i.m.	60
		2 mg p.o.	160
		"	340
		0	75
		"	70
		"	15

urinary excretion of vitamin. At present it seems evident that patients who have been on low vitamin B_1 diets excrete less than the usual normal amounts of vitamin B_1 in their urine, and that the more deficient ones have a less than normal increment in B_1 excretion following the administration of small doses of vitamin. A much larger series of patients and a better understanding of the factors relating tissue saturation and urinary excretion will be required before accurate interpretation of the results of B_1 tolerance tests can be attempted. However, it is interesting that in one year we were unable to find any patient whose urinary excretion of vitamin B_1 could not be raised to normal by the administration of very small amounts of vitamin, amounts comparable to those obtainable in ordinary normal diets.

Conclusion. It appears possible to correlate the urinary excretion of vitamin B_1 with the state of vitamin B_1 nutrition in man using a thiochrome method for determining the amount of vitamin B_1 in urine.

11564

Gravimetric Intestinal Oncometry in the Dog.

HAMPDEN LAWSON.

From the Department of Physiology, University of Louisville School of Medicine, Louisville, Ky.

The usual difficulties of quantitative plethysmography are multiplied when the method is applied to the intestine by the occurrence of intestinal contractions which may compress gases trapped within the lumen of the gut, even though the ends of the loop are open, and

which, if strong enough, may pull mesentery into the chamber. These difficulties are obviated by the substitution of a simple gravimetric method, which permits, as an added advantage, simultaneous recording of intestinal motility.

A loop 6 to 10 cm in length, whose mesentery is long, is separated by incisions which are converged to the root of the mesentery, care being taken to preserve the loop's blood supply. With the dog lying supine, the loop and its prepared pedicle are lifted over a horizontal rod held in a clamp as close as possible to the root of the pedicle, and the pedicle is sutured to the rod (Fig. 1, a). The loop is threaded upon a light supporting rod (b), and the ends securely fastened. The projecting ends of the supporting rod are attached by means of threads to the horizontal beam of a spring balance (c). The tension of the spring and the leverage are adjusted until the loop on its rod, and the entire pedicle are swung clear of the animal. The loop should lie approximately in the same horizontal plane as the rod which supports the pedicle at the root.

It has been found simpler to record the movements of the horizontal beam indirectly, through a second light magnifying lever (e) as this permits adjustment of leverages without disturbing simultaneous

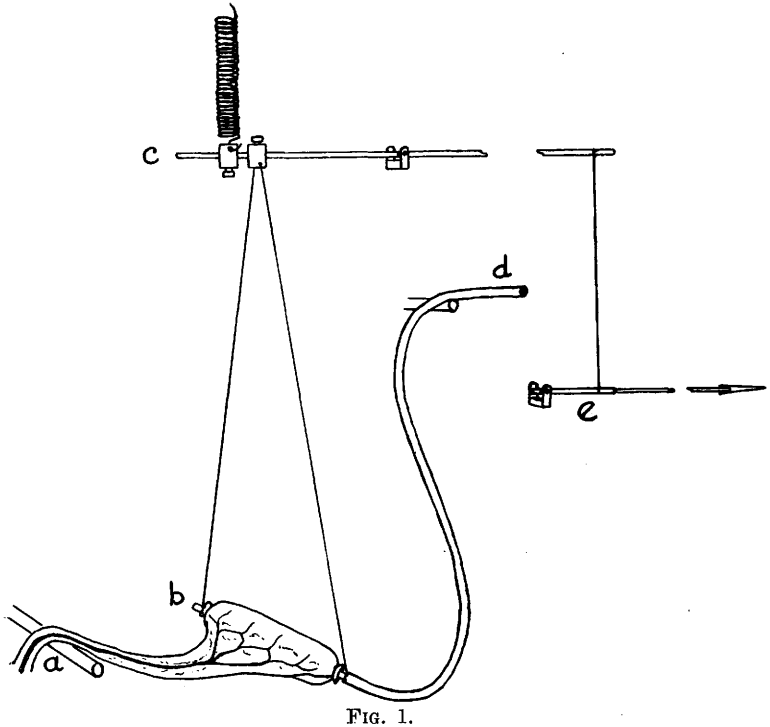

FIG. 1.
For description see text.

ordinates on the record. If long loops are taken, strong contractions may exert pull on the pedicle, and so interfere with the record. This does not occur if the loops are short, the ends are tied securely to the supporting rod, and the pedicle is slack. The vertical component in horizontal forces acting on the pedicle is reduced by having the threads connecting the loop with the beam of the balance long.

By using jeweled bearings in both fulcra, and long flexible helical springs, it is possible to obtain an apparatus which is sensitive to sudden changes of 0.1 g in the weight of the gut, and which returns to the base line when unloaded. With greater sensitivity than this, the base line tends to shift. A satisfactory spring may be made from 26 gauge steel wire, wound to have a diameter of 1 cm, a length of 10 cm. Each preparation is calibrated during the experiment by laying weights on the intestine while it is in recording position.

With low magnification in the 2 levers and fairly high natural frequency for the apparatus, the pulse may be recorded ballistically. Usually, however, the pulse does not show in the record.

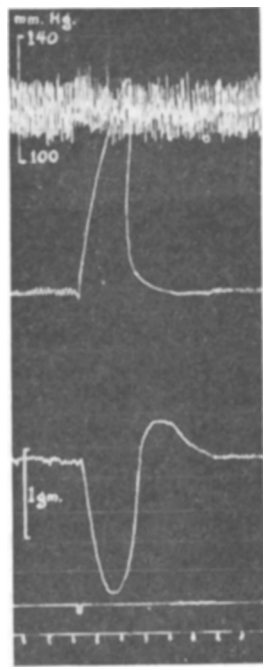

FIG. 2.

Records from above down are: carotid arterial pressure; balloon record of loop, taken from large-bore water manometer with volume recorder; weight of loop. At the signal 10 gamma epinephrine were injected into the superior mesenteric artery, producing strong motor response of the loop. Time in minutes. The dilator rebound in weight following epinephrine is common but not constant.

Simultaneous records of intestinal motility may be made by substituting for the rod which supports the loop a light metal tube carrying a condom balloon. One projecting end of the tube is closed, the other connected through very flexible rubber tubing (d) to a water manometer or other recording device. Balloon and tubing are filled with air. The tubing is supported in a long loop as it leaves the intestine, so as to damp the movements of the weight recorder as little as possible.

The loop hanging in air is coated with liquid petrolatum to limit drying. It is kept close to body temperature with a three-sided metal shield with open top which encloses the lower half of the animal and in which lamp bulbs are hung as heating elements.

Under some conditions accumulation of secretions in the loop causes a progressive increase in weight throughout the period of observation. It is simpler to work on a steadily rising weight record than to prevent this with drainage. The spring tension may be adjusted from time to time to keep the writing lever in recording position.

Figure 2 shows the type of record obtained with this arrangement. Under optimum conditions, with the gut showing strong rhythmic contractions, rhythmically recurrent changes in weight are recorded, reciprocating with the motility record. These are just visible in the weight record in Fig. 2, during the periods when the motility record shows weak rhythmic contractions.

11565

Effect of Morphine Sulfate on Serum Choline-Esterase.

DONALD SLAUGHTER AND ROBERT W. LACKEY.

From the Laboratory of Physiology and Pharmacology, Baylor Medical School, Dallas, Texas.

It has been previously reported by Slaughter and Gross,[1] and Slaughter and Munsell[2] that physostigmine and prostigmin respectively potentiate the action of morphine on the intestine, blood pressure, on toxicity and pain. The belief that these effects might be in part due to a depression of choline-esterase by morphine was expressed.

1 Slaughter, Donald, and Gross, E. G., *J. Pharm. and Exp. Therap.*, 1940, **68**, 96.

2 Slaughter, Donald, and Munsell, Donald W., *J. Pharm. and Exp. Therap.*, 1940, **68**, 104.