

the aorta of the surviving rat and the oozing blood was replaced by the injected fluid. These injections have been continued in the study of rat-mouse parabiosis, but in the injections so far attempted our technique has not been sufficiently satisfactory to make the results conclusive.

59 (469)

A demonstration of the inhibitory effect of magnesium upon normal and artificial peristalsis of the stomach and duodenum.

By **DON R. JOSEPH** and **S. J. MELTZER.**

[From the Department of Physiology and Pharmacology of the Laboratories of the Rockefeller Institute for Medical Research.]

Some years ago J. B. MacCallum¹ made the statement that purgation can be brought about by subcutaneous or intravenous injection of magnesium sulphate. He ascribed the effect to the stimulation of nerve and muscle tissue of the intestines by this salt, which thereby caused increased peristalsis.

In a paper by Meltzer and Auer² it was stated, however, that magnesium salts not only do not cause peristalsis, but directly inhibit it when normally present or even when aggravated by barium or physostigmin.

In opposition to this statement it was asserted in a paper by S. A. Matthews and D. E. Jackson³ that after injection of magnesium sulphate the peristalsis shows no especial departure from the normal and barium and physostigmin show their usual action.

In order to obtain unbiased and incontestible evidence, the question was studied now by the graphic method. We employed for this purpose the following procedure. Rabbits only were used. A laparotomy was performed under anesthesia and a soft rubber catheter bearing a thin walled rubber balloon at its end, was introduced through an incision into the stomach and then pushed through the pylorus into a deep place in the duodenum. Another similar balloon was left in the stomach. All the incisions

¹ *Amer. Jour. of Physiol.*, 1903, x, 101.

² *Amer. Jour. of Physiol.*, 1906, xvii, 313.

³ *Amer. Jour. of Physiol.*, 1907, xix, 5.

were then carefully closed. Next day and on the following days the catheters were connected with Marey tambours and the peristalsis studied graphically. The tracings show well defined characteristic waves produced by the contractions of the duodenum and stomach. These waves became greatly influenced — aggravated — by barium as well as by physostigmin. We shall not discuss here the character of these influences. We wish to point out only the effect of magnesium upon the peristaltic movements.

The tracings show in an unmistakable manner that the intravenous or intramuscular injection of a magnesium salt abolishes completely and for some time the normal peristalsis as well as the contractions of the duodenum and the stomach caused by barium and physostigmin. We shall not enter here upon any particulars. We wish, however, to add that our method differs from other methods employed for similar purposes in that (1) the intestines are not handled at all, and that (2) the peristalsis can be studied when the animal has completely recovered from the effects of the operation. We are utilizing this method for studying various phenomena pertaining to normal peristalsis and shall report our observations in later communications.

60 (470)

Recovery from fatal doses of strychnin by the aid of curarin and artificial respiration (insufflation method).

By **A. O. SHAKLEE** and **S. J. MELTZER**.

[From the Department of Physiology and Pharmacology of the Rockefeller Institute for Medical Research.]

In a series of twenty-seven experiments upon dogs and cats we tried to develop a method by means of which life can be saved after fatal doses of strychnin. In all cases the strychnin was administered intravenously. In control experiments 0.4 mg. per kilo was invariably fatal, killing within an hour. By the aid of the method which will be described presently fourteen of the twenty-seven dogs used in developing the method survived the administration of fatal doses of strychnin. Of these fourteen five received 0.5 mg., three received 0.75 mg., and six received 0.8 mg. per kilo, that is, all animals received doses of strychnin which were in