It is evident from Table I that tissue emulsions prepared in the specified manner while depleting rabbit anti-guinea pig kidney serum of its sheep cell antibodies, frequently in a single adsorption, fails to remove any significant part of these antibodies from infectious mononucleosis sera. Boiled sheep cells, as might be anticipated, adsorb sheep cell antibodies from both the pathological sera and the immune sera.

It is interesting to note that the injection of guinea pig kidney into rabbits produces a high lytic titer for sheep cells but a very low agglutinating titer for the same cells. Prolonged immunization does not alter this condition. On the other hand in infectious mononucleosis sera, the increase in sheep cell agglutinins and lysins are often identical until the maximum point is reached. In several cases, however, we have noted that the lytic titer decreases sooner and more rapidly than the agglutinating titer.

The increased sheep cell antibodies which appear in the blood of infectious mononucleosis patients while heterophile in nature are not of the guinea pig heterophile type.

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Action of Apomorphine Hydrochloride upon the Small Intestine in Non-anesthetized Dogs.*

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Morphine when subjected to a strong acid undergoes a chemical rearrangement becoming apomorphine, an isoquinoline derivative possessing very little narcotic action but a strong emetic action. Cannon[1] investigated the action of apomorphine upon the cat's stomach by the X-ray method. He observed that there was total inhibition of the cardial portion of the organ while there was contraction of the extreme end of the pyloric portion.

As no study of the action of apomorphine upon the intact intestine of the unanesthetized dog seems to have been done this series of experiments was undertaken.

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[1] Cannon, *Am. J. Physiol.*, 1898, **1**, 373.

The method was the same as that employed in another research[2] and will therefore not be described in detail here. The animals were the same as those used in the previous work, 5 having Thiry-Vella loops of the ileum and 3 of the jejunum. They were healthy animals in every respect. Apomorphine, in doses of 0.013 to 0.02 mg. per kg. body weight, dissolved in Ringer's solution, was injected intravenously 10 times in the 5 animals with Thiry-Vella loops of the ileum and 8 times in the 3 animals with jejunal loops.

In every experiment performed on the 3 dogs with Thiry-Vella loops of the ileum and the 4 with similar loops of the jejunum, apomorphine caused a rapid increase in the general tonus which was followed by an abrupt fall during a period of nausea. This was followed by a rather prolonged increase in general tonus. The periods of nausea were evidenced sometimes by vomiting and others simply by profuse salivation and licking reflexes depending on the size of the dose of the drug administered. The inhibition of the jejunum, during the period of nausea, was far more pronounced than that of the ileum. In many experiments, only salivation occurred and yet relaxation of the jejunum was very apparent.

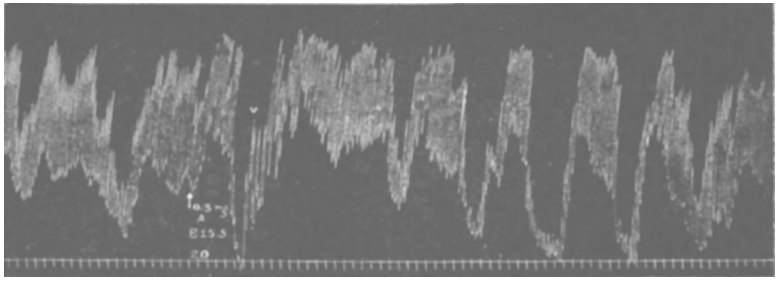

FIG. 1. Female dog weighing 15.5 kg. with a Thiry-Vella loop of the jejunum. In this and the following figure the top curve is that of the intestine and the bottom, the time interval written in 20 seconds. Contraction up stroke, relaxation down stroke in the intestinal record. The balloon had a length of 50 mm. and a diameter of 20 mm. The pressure within it was 15 cm. of water.

At the ↑, 0.3 mg. of apomorphine hydrochloride was injected intravenously. At V, the animal vomited.

Fig. 1 shows a record of the jejunum before and after the injection of apomorphine. At the arrow, 0.3 mg. of apomorphine hydrochloride was injected into an animal weighing 15.5 kg. This was followed by a slight but sudden increase in general tonus which dropped very rapidly to a low level as signs of discomfort, excess salivation and rapid licking to overcome it, became noticeable. At V, the animal vomited and after this the general tonus increased to

[2] Gruber and Brundage, *J. Pharmacol. and Exp. Therap.*, 1935, **53**, 120.

a point above the control level. Subsequently this change was followed by increased peristaltic activity and decreased general tonus.

The ileum responded to the administration of apomorphine less actively than did the jejunum. The loss of tonus of the ileum was always less than that of the jejunum. The writing lever recorded an increase in tonus during each vomiting spell but this is, of course, due to the contraction of the abdominal muscles and is not a direct result of the drug's action. Though the ileum loses some of its tonus during the period of nausea this is far less than that suffered by the jejunum. The effect of increased tonus predominates in the ileum, even small doses producing prolonged increases in general tonus.

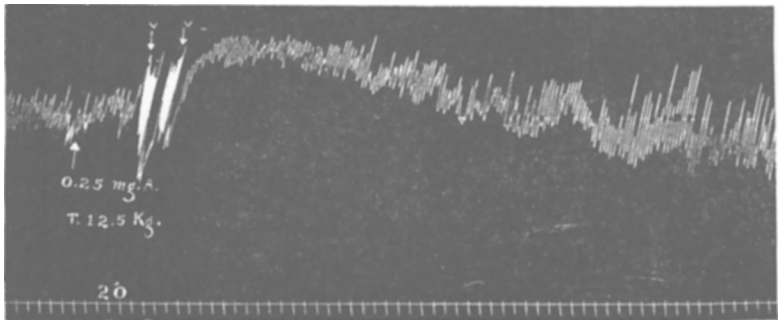

FIG. 2. Female dog weighing 12.5 kg. with a Thiry-Vella loop of the ileum. At the ↑, 0.25 mg. of apomorphine hydrochloride was injected intravenously. At V the animal vomited.

In Fig. 2, an animal weighing 12.5 kg. was given, at the arrow, 0.25 mg. of apomorphine hydrochloride dissolved in Ringer's solution. The general tonus increased shortly after the injection. Within 2 minutes after the injection the animal vomited twice, at V. After cessation of vomiting the tonus recorded a level below that of the control level. A minute later or 3 minutes after the injection the tonus had risen above the control level. A gradual decrease brought it back to normal after 15 minutes.

Conclusions. 1. Apomorphine hydrochloride by causing nausea in the unanesthetized dog, momentarily decreases the general tonus of the ileum and jejunum. 2. Apomorphine, in large enough doses, causes an increase in the general tonus of the ileum and jejunum similar to that produced by morphine. 3. With the use of the jejunal loop it may be determined that apomorphine may cause an increase in the peristaltic activity of the organ and at the same time a decrease in the tonus. This phenomenon is similar to that noted with the use of dilaudid and morphine in these same animals.