solutions. Tonus was depressed in practically all cases. Although the amplitude of the rhythmic contractions showed considerable augmentation with a solution of $N/200$, this was often preceded by a preliminary decrease. Total inhibition of activity was first observed with solutions of $N/50$.

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The nature of the toxemia of intestinal obstruction. Preliminary report.

By **L. R. DRAGSTEDT, J. J. MOORHEAD** and **F. W. BURCKY** (by invitation).

[*From the Hull Physiological Laboratory of the University of Chicago.*]

Confirming the results of previous investigators we found that dogs with an isolated closed loop of duodenum or jejunum die in 48–96 hours, in most cases with perforation of the isolated loop and general peritonitis. But there is usually no excessive vomiting and hence no fatal dehydration of the body tissues.

In twenty-five dogs a segment of the jejunum was isolated, washed with ether and sterile water, or sterile salt solution, and both ends closed. Sixteen of the dogs died in 4–6 days, all of them showing perforation of the loop and general peritonitis. The other nine dogs lived indefinitely (some of them to date, 6 months) in good condition. Some of the dogs were examined 1–3 months after the operation. In every case, except one, the loops were found closed, the mucosa normal, some thick fluid in the lumen of the loop containing *B. coli* and a small coccus. In one dog in good condition examined seven weeks after the operation the loop was found perforated, but there was no peritonitis and the fluid contents of the loop was sterile.

When the isolated and closed loops of the jejunum is sterile complete occulusion of the blood vessels to the isolated loop has no effect on the dog, but if the loop is not sterile, the occlusion of the circulation in the loop causes death in 24–48 hours with the usual symptoms of complete intestinal obstruction.

In nine dogs a segment of the lower duodenum was isolated,

washed with ether and sterile salt solution, and the ends closed. All of these dogs died within 24–48 hours, with the usual symptoms of toxemia. In all cases the loops, on autopsy, were greatly distended, and black, or covered with purple blotches. Four of the loops had perforated. In every case the fluid in the loops contained *B. coli*, other baccilli, and cocci. The failure to get dogs thus operated to live on in good condition appears to be due to the occlusion of the circulation in the loops by distension from the duodenal secretion, subsequent necrosis, and bacterial toxemia.

In nine dogs the isolated segment of jejunum was washed with 70 per cent. alcohol or 2 per cent. lysol and sterile water or salt solution. All the dogs died within 4–18 days with perforation of the loop and peritonitis.

In four dogs a segment of the upper jejunum was washed in sterile water and replaced in the abdominal cavity without closing the ends. These dogs lived indefinitely without showing any symptoms. Five weeks after the operation a second laparatomy was performed on two of the dogs and it was found that both ends of the loops were closed by adhesions. The mucosa of the loop was normal and the fluid in the loops sterile.

In six dogs an isolated segment of the duodenum (just below the posterior pancreatic duct) was replaced in the abdominal cavity without washing the lumen or closing the ends. Three of these dogs died within five days of general peritonitis. The other three dogs lived indefinitely without showing any symptoms. One dog was inspected 20 days, and another 30 days after the first operation. In both cases the ends of the loops were completely closed by adhesions, the lumen somewhat distended with a sterile fluid, and the mucosa and muscularis normal. It is clear that the duodenal and jejunal secretions are not toxic when poured directly into the abdominal cavity.

The experiments to date, comprising work on 96 dogs, seem to warrant the following conclusions:

1. Closed intestinal loops in which the bacteria are first removed are not incompatible with life.

2. Closed intestinal loops in which bacteria are present but in which tissue necrosis is prevented are not incompatible with life.

3. Closed aseptic intestinal loops in which the blood supply is completely shut off are not incompatible with life.

4. Bacterial activity plus the necrotic tissue or the results of the action of bacteria on necrotic tissue is the important factor in the rapid death in simple closed intestinal loops.

5. The normal secretions of the duodenum and jejunum are not toxic when allowed to drain into the abdominal cavity.

6. Our results do not support the theory of Draper of a normal toxic secretion of the duodenal mucosa, neutralized by the jejunal mucosa, or the perverted secretion theory of Whipple.

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The effect of intravenous injections of fresh human serum and of phosphated blood, on the coagulation time of the blood in hereditary hemophila.

By THOMAS ADDIS.

[*From the Laboratory of the Medical Division of Stanford University Medical School, San Francisco.*]

The coagulation time of the blood in hereditary hemophilia fluctuates in an irregular manner from day to day. Only very pronounced alterations are therefore of value as a guide to the effect of any particular method of treatment. The variations shown in Table I were observed in cases who were not subjected to any treatment. In many instances the changes observed are well beyond the error of the method which was used. Five cubic centimeters of blood were withdrawn from the median basilic vein through a short oiled needle into two or more test-tubes, and the average interval of time required until coagulation had advanced sufficiently to allow of the complete inversion of the tubes without spilling the contents was taken as the coagulation time. The temperature was 37° C. Normal blood requires about 13 minutes to coagulate under these conditions. Parallel observations with another method showed that reliable results could be obtained with blood from skin puncture when certain details in the manner of collecting the blood were observed.[1]

[1] Addis, T., *Edin. Med. Journ.*, 1910, V, 38.