These and other experiments indicate that the efficiency of the local circulation determines whether the heat produced by the passage of high frequency currents through the living animal will remain localized or be disseminated uniformly throughout the body.

This is a preliminary report.

[1] Clark, Harry, *J. Exp. Med.*, 1922, xxxv, 385.

[2] Moore, Richmond L., and Binger, Carl A. L., *J. Exp. Med.*, 1927, xlv, 655.

3517

Observations Upon Certain Isolated Loops in Intestinal Obstruction.

H. B. EISBERG.

From the Department of Experimental Surgery, New York University and Bellevue Hospital Medical College.

In previous experiments[1] loops of intestine were doubly occluded and the continuity of the intestinal tract was re-established by anastomosis between the proximal and distal ends. (Fig. 1. a.) At the same time, nothing was done to interfere with the mesenteric circulation of these blind intestinal loops. A fatality occurred if the loop subsequently twisted so as to occlude the mesenteric circulation, or if the loop distended sufficiently to interfere with the circulation of the vasa recta through intra-enteric pressure. If the above factors did not obtain, the animal, in each case, made an uneventful recovery.

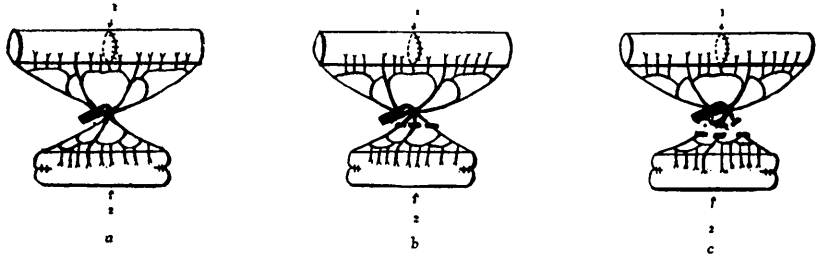

FIG. 1.

a No deliberate interference to mesenteric circulation.
b Mesenteric circulation ligated.
c Mesenteric circulation ligated and cut.
1 Reconstruction of canal.
2 Isolated loop.
Black oblong = deliberate interference to mesenteric circulation.

Additional experiments showed that scraped, washed intestinal mucosa, when introduced into the peritoneal cavity, gave one of these results: the animal made an uneventful recovery, or the animal died as the result of a peritonitis, or the animal developed symptoms and signs of an intoxication similar to that of intestinal obstruction.

Dragstedt et al.[2] showed that sterile devitalized segments of intestine were compatible with life.

The following experiments were divided into four groups:

TABLE I.

Group	Experimental technic	Total animals used†	Average duration of life	Necroscopy and remarks
1*	Immediate occlusion of circulation Loop pedicle intact Fig. 1 b	2	62 hours	Loops slightly distended, dark red discoloration Sero-sanguinous fluid in peritoneal cavity
2*	Gradual occlusion of circulation Loop pedicle intact Fig. 1 b	3	38 hours	Loops distended, bluish-black discoloration Sero-sanguinous fluid in peritoneal cavity
3*	Immediate occlusion of circulation Loop pedicle divided Fig 1 c	3	32 hours 1 animal 2 animals still living	Loops slightly distended, dark red discoloration Sero-sanguinous fluid in peritoneal cavity Two animals still living—symptomless
4*	Gradual occlusion of circulation Loop pedicle divided Fig. 1 c	5	38 hours	Loops slightly distended, dark red discoloration Sero-sanguinous fluid in peritoneal cavity

*Operation common to all experiments. A 20 to 30 cm. intestinal segment was isolated and ends were occluded; continuity of the intestinal canal was reconstructed.

†Variations, 16 animals not included in above table.

These experiments apparently establish the fact that an isolated loop with or without intact pedicle can produce a lethal agent, absorbable through the capillaries or lymphatics of the peritoneum. The result may be fatal without the production of a bacterial peritonitis. The clinical picture and necroscopy findings are similar to those of segmental or loop intestinal obstruction. In some instances

the animals made an uneventful recovery, whereas in others a generalized peritonitis resulted.

This is a preliminary report.

[1] Eisberg, H. B., *Ann. Surg.*, 1921, lxxiv, No. 5.

[2] Dragstedt, L. R., Moorehead, J. J., Burcky, F. W., *J. Exp. Med.*, 1917, xxv, 421.

3518

A Simple Respirometer for Microbial Respiration.

EARL B. McKINLEY AND CALVIN B. COULTER.

From the Department of Bacteriology, College of Physicians and Surgeons, Columbia University.

Since the comprehensive work of Novy, Roehm and Soule[1] on microbic respiration appeared in 1925, an effort has been made to devise a simple apparatus for determining CO_2 production in cultures which would be simple and available for ordinary laboratory use. It is doubtful if any device known at present will give the fine results which Novy, Roehm and Soule are able to obtain with the compensation manometer.

Bronfenbrenner[2] described a simple micro-respirometer in 1926 using as a test object a strain of bacteriophage. He was unable to demonstrate that the bacteriophage respired. In a more recent report this author has studied the respiration of the herpes virus and of rabies virus[3]. In this study in order to differentiate between the respiration of tissue and that of the filterable virus he made use of the Warburg[4] respirometer to determine the oxygen uptake and of his closed cell respirometer for the respiration proper.

Bertrand[5] was perhaps the first to make use of an alkali trap for the absorption of respired CO_2. In searching for some simple method to demonstrate microbial respiration to students in bacteriology we decided to make use of this simple procedure. From ordinary culture tubes containing smaller tubes within, which served for a trap, a more elaborate apparatus has been devised by which it is possible to make quantitative tests for respiration as well as qualitative tests.

Figure 1 shows such an apparatus in the form of a flask carrying a side chamber which serves as the trap. The flask E is of 100 cc. capacity. It is entered through stop-cock B and can be exhausted