The largest amount of absorption occurs at 15 and 30 minutes and decreases therefrom; 2 dogs killed at 2 hours after injection were negative throughout.

Conclusions. 1. Yeast is absorbed from the lumen of the colon in greatest numbers at 15 minutes, diminishing thereafter until none can be demonstrated at the 2-hour interval. 2. Eggwhite mixed with yeast increases the number of yeasts absorbed from the rectum of the dog. 3. A greater number of viable yeast cells can be demonstrated to be present in certain organs after the application of eggwhite to the duodenal mucosa and yeast introduced into the lumen of the rectum. This may not be due to increased absorption but to a decrease in the destruction of yeast in the body.

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Absorption of Bacteria from the Large Intestine.

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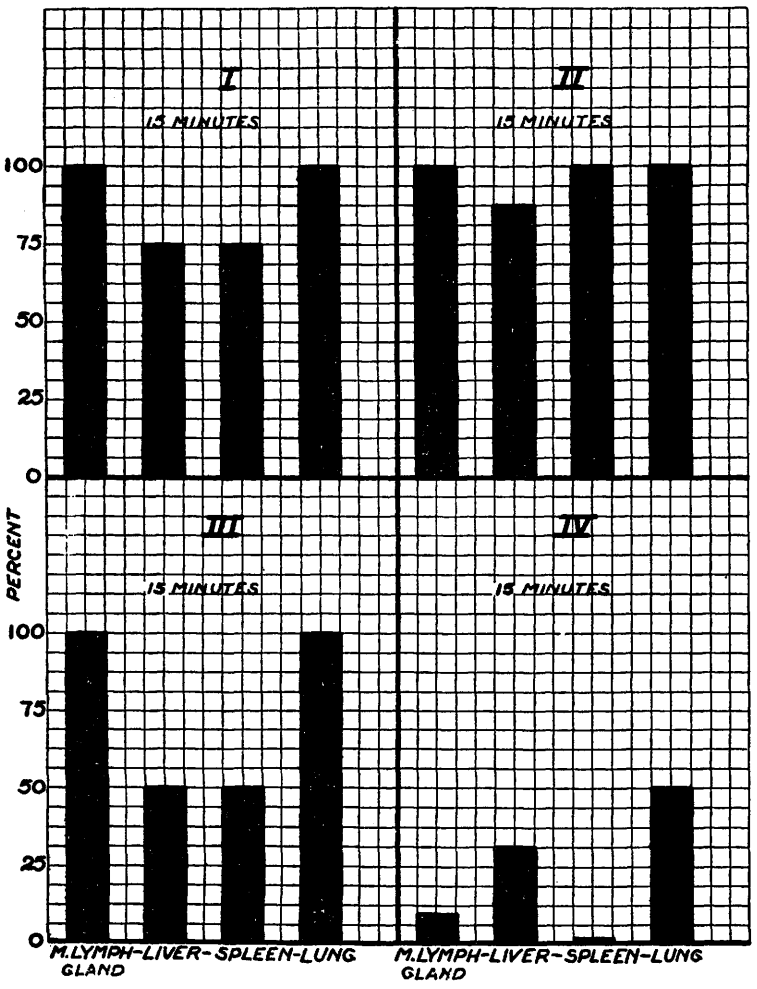
B. prodigiosus, B. murii, and *B. welchii* have been placed in the lumen of the large intestine of dogs. The animals were killed 15, 30, 45 minutes, 1, 2, 3, 4, and 24 hours after rectal injection and the mesenteric lymph node, liver, spleen and lung specimens were removed under aseptic precautions. The tissue was cut up with sterile scissors, placed in broth cultures and further macerated with glass rods. All cultures were incubated 24 hours. Subcultures were made on plain agar for *B. prodigiosus,* Endo media for *B. murii* and *B. coli;* dextrose broth, dextrose agar shake tubes and brain media were used to subculture *B. welchii.* Ether, chloratone and nembutal anesthetics were used. No differences in bacterial permeability were noted with different anesthetics. In some animals the large intestine was washed out with saline and in the beginning of our work we exposed the large intestine by abdominal incision. Anesthetics were used throughout to make our results comparable and avoid struggling of animals during experiment. Only a part of our experiments will be reported here.

Animals killed 15 minutes after rectal injection show the highest percent of positive organ cultures. One hour after rectal injection

all organs are free of viable bacteria. The 30 and 45 minute intervals after rectal injection show progressively few bacteria in the organs cultured as compared to the 15 minute time interval. Sixteen dogs were killed and organ cultures made with same technic as



GRAPH 1.

Ordinate: % of animals showing viable bacteria.

Abscissa: the 4 organs cultured, mesenteric lymph node, liver, spleen, and lung.

I. Catheter introduced into rectum and 10 cc. of sterile saline injected. Ten dogs used, killed 15 minutes after injection. *B. coli* in organs recorded.

II. Same technic except *B. prodigiosus* injected in the 10 cc. of saline. The *B. prodigiosus* in organs recorded.

III. Same technic, except *B. prodigiosus* was suspended in alkaline phosphate buffer solution (pH 8.0). *B. prodigiosus* in organs recorded.

IV. Same technic, except *B. prodigiosus* was suspended in acid phosphate buffered solution (pH 5.0). *B. prodigiosus* in organs recorded.

controls. Two showed *B. coli* in the mesenteric lymph gland and this bacillus was isolated from the liver of one dog. Cocci groups—mostly enterococci—were cultured from the majority of mesenteric lymph nodes and liver of all dogs.

Mechanical irritation due to the introduction of a vaselined catheter and 10 cc. of sterile saline causes the appearance of viable *B. coli* in the internal organs if cultured within 15 minutes. After 45 minutes *B. coli* cannot be cultured from these same organs. We could not demonstrate any difference in permeability between *B. prodigiosus, B. murii,* and *B. welchii.*

The accompanying graph represents the 15 minute time interval after mechanical manipulation only, after *B. prodigiosus* in saline and after *B. prodigiosus* in alkaline and acid phosphate buffered solutions. The differences between the latter 2 solutions are very striking. Rats have also been used and the observations made upon dogs have been substantiated. The same technic and the same test bacteria were used. Fifteen minutes after mechanical manipulation associated with the introduction of a thin, oiled catheter through the anus and injection of 10 cc. of saline, viable bacteria can be demonstrated within certain organs. Endogenous bacteria are present when sterile saline is used, exogenous bacteria are present if they were suspended in the saline.

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Influence of Saponin upon Bacterial Flora, H-ion Concentration and Permeability of the Intestinal Tract.

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Kaufman[1] showed that the oral ingestion of small doses of saponin caused a sudden alteration in the bacterial flora and the acid-base equilibrium of the contents of the stomach and small intestine of mice. His work was part of a study upon the increased susceptibility of rodents to enteritides infections. We have extended Kaufman's experiments to dogs. In addition to the intra-intestinal changes we have studied the distribution of *B. coli* in the organs of these animals.

[1] Kaufman, I., PROC. SOC. EXP. BIOL. AND MED., 1931, **29**, 21.