cautions. These dogs were operated upon under ether anesthesia and under sterile conditions. After opening the abdomen the cystic duct was tied off close to the common bile duct, carefully avoiding injury of gallbladder vessels. Two of these dogs were killed on the seventh day, the third dog on the eighteenth day and the fourth dog on the twentieth day. Half an hour before killing these animals 5 cc. of a saline suspension of *B. prodigiosus* (washings of one agar plate in 50 cc. of a saline solution) were injected into the femoral vein of each dog. The bile, *in toto*, was removed under sterile precautions and placed in a flask of broth. The swabs, after swabbing the wall of the gallbladder, were also used to inoculate the broth. All 4 dogs gave positive results, showing the presence of *B. prodigiosus*. We conclude that the hematogenous route also plays a part in the elimination of bacteria into the gallbladder.

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V. Absorption of Bacteria from the Gallbladder.

A. J. NEDZEL AND LLOYD ARNOLD.

From the Department of Bacteriology and Preventive Medicine, University of Illinois College of Medicine, and Illinois State Department of Public Health, Chicago.

In the preceding reports we have observed a cyclic circulation of bacteria in the splanchnic area of the body. The gallbladder was involved in this cycle so we next studied the absorption of bacteria from the gallbladder into the splanchnic circulation.

It has long been known that resorption of neutral fats, lipoids, bile pigment and other substances through the epithelium and lymphatics of the gallbladder mucosa can be demonstrated histologically (Royster[1]). In long continued closure of the cystic duct the cholesterol constituent is reduced from resorption by the bladder wall (Rosenthal and Licht[2]). Blad[3] and Bundschuk[4] described cases of bile peritonitis where, according to their investigations, there was no perforation of the gallbladder. Lange and Roos[5] performed experiments in which, after injection of bacilli into the gallbladder,

[1] Royster, H. A., *Med. J. and Rec.*, 1930, **132**, 232.
[2] Rosenthal and Licht, *Klin. Woch.*, 1928, **7**, 1952.
[3] Blad, A., *Arch. f. Klin. Chir.*, 1917, **109**, 101.
[4] Bundschuk, E., *Arch. f. Klin. Chir.*, 1930, **161**, 549.
[5] Lange and Roos, *Arch. Kais. Gesdhamt*, 1917, **50**, 57.

the same bacteria was demonstrated in the ear vein of a rabbit as soon as one or 2 minutes after injection.

Our experiments were as follows: The abdomen of 6 dogs, fasted for 24 hours, had been opened under ether anesthesia. A cut in the common bile duct was made large enough to insert a No. 6 silk catheter. The latter was introduced through this opening, through the cystic duct into the lumen of the gallbladder. Then the cystic duct was ligated close to the common bile duct, in order not to injure the cystic artery and vein and at the same time keep the catheter in place. (See the schematic drawing.)

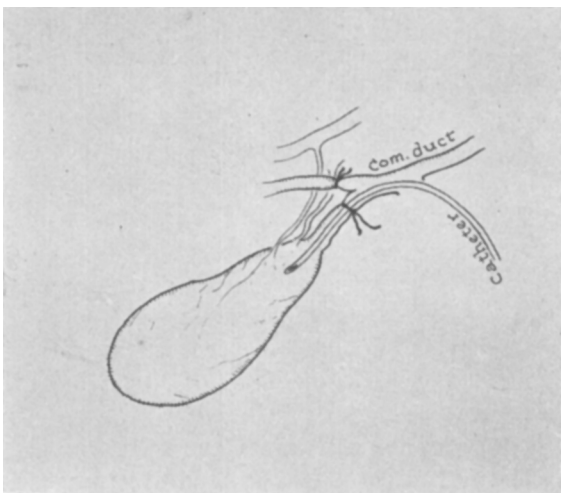

FIG. 1.

The bile was drawn out with a syringe through the catheter and replaced with 5 cc. of a suspension of *B. prodigiosus* in saline solution (washings of agar plate in 25 cc. of *B. prodigiosus*). The dogs were killed in 30 minutes and 3 pieces of liver from different parts were cut out and placed into 100 cc. flask of broth. Sterile gauze was packed around the area of the incision in the common bile duct through which the catheter was inserted. This gauze was removed after the animal was sacrificed and in all 6 experiments *B. prodigiosus* could not be cultivated from the gauze. In 4 dogs the results were positive for the presence of *B. prodigiosus* in the liver and in 2, negative. These experiments show that there is absorption of bacteria from the gallbladder into the splanchnic circulation in the majority of the animals.