pletely arrested. Evidences of transperitoneal absorption occurred in 2 of the 5 experiments in which nicotine was employed, in one of the 5 experiments in which pilocarpine was employed, but in no instance with the other drugs employed. In the 2 positive experiments with nicotine, the dog to whom the loop belonged had died 10 and 20 minutes respectively before evidences of transperitoneal absorption of nicotine were apparent. In the case of the positive experiment with pilocarpine, the distention had been maintained for approximately one hour. These positive results were therefore apparently conditioned by devitalization of the loop.

These observations seem to warrant the following conclusions: Variations in intraintestinal pressure have little effect upon the mesenteric absorption of readily absorbable substances until the pressure reaches that of the diastolic blood pressure, when such mesenteric absorption ceases. Moderate distention occasionally facilitates the absorption of substances not normally readily absorbed. Transperitoneal absorption may occur but is very slow and probably insignificant from viable intestine, while it may become significant from a devitalized segment of bowel subjected to distention.

6640

Passage of Exogenous Bacteria Through the Wall of an Isolated Stomach.

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Nedzel and Arnold[1] showed the passage of exogenous bacteria from the small intestines into the blood circulation. Boone and others[2] proved the passage of the same bacteria into the portal circulation from the small intestines. Fisher[3] showed the same for yeast. Shuger and Arnold[4] gave evidence of absorption of exogenous bacteria from the large intestine. Fisher[5] does the same for yeast. Nedzel and Arnold[6] prove the passage of bacteria through the wall of the gallbladder. Tsuji[7] states that bacilli introduced into

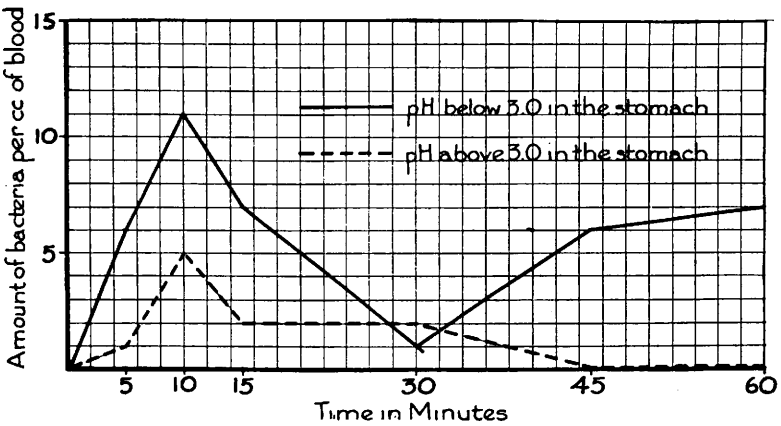
[1] Nedzel, A. J., and Arnold, L., PROC. SOC. EXP. BIOL. AND MED., 1931, **28**, 358.

[2] Boone, T., Chase, E., Brink, E., PROC. SOC. EXP. BIOL. AND MED., 1931, **29**, 113.

the gallbladder can invade the blood, bile and urine through the mucous membrane of the gallbladder and that the invasion is more powerful in cases of pathological changes of the gallbladder wall.

The permeability of the stomach was studied in the following manner: 20 dogs, fasted for 24 hours, were used; all were given nembutal anesthesia. The abdomen of each dog was opened, the duodenum exposed and tied off near the pylorus, carefully avoiding the possible ligation of the large blood vessels in this region. An opening was made in the duodenum adjacent to the ligature. A row of ligatures was placed around this opening to prevent bleeding. We were able to introduce material into the stomach and also to obtain specimens with a pipette.

The experiments fall into 2 groups. One group (11 dogs), where we introduced into the stomach of each dog a suspension of *B. prodigiosus* (washings of one agar plate of 24 hours growth) in 50 cc. of an isotonic saline solution where the pH of the stomach contents after introduction of this suspension was below 3.0. In the other group (9 dogs) the same amount of *B. prodigiosus* was used but they were suspended in 50 cc. of an alkaline buffer solution. The further technic was the same for both groups, namely: Four drops of blood were drawn by means of a sterile syringe from a right gastro-epiploical vein at 5, 10, 15, 30, 45, and 60 minute time intervals, and plated on agar. Simultaneously a specimen of stomach



GRAPH 1.

Ordinate—amount of bacteria per cc. of blood. Abscissa—time in minutes.

[3] Fisher, V., PROC. SOC. EXP. BIOL. AND MED., 1931, **28**, 948.

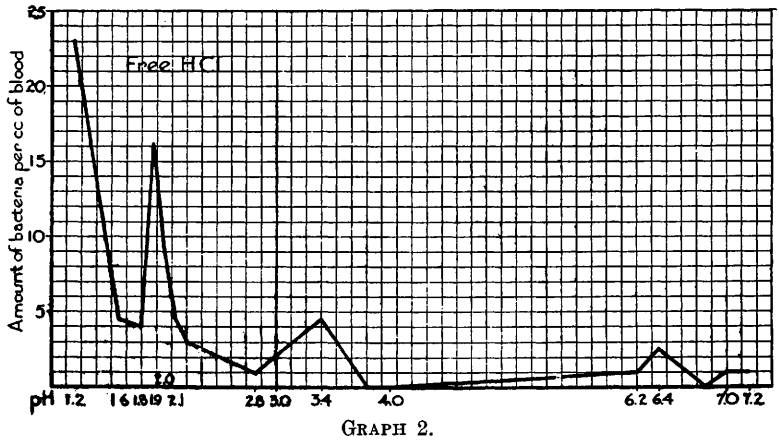
[4] Shuger, M., and Arnold, L., PROC. SOC. EXP. BIOL. AND MED., 1932, **29**, 494.

[5] Fisher, V., PROC. SOC. EXP. BIOL. AND MED., 1932, **29**, 490.

[6] Nedzel, A. J., and Arnold, L., PROC. SOC. EXP. BIOL. AND MED., 1931, **28**, 366.

[7] Tsuji, Joichi, *Biological Abstract*, 1932.

contents was removed with a sterile pipette and the pH determined (La Motte hydrogen ion testing set). The plates were recorded after 48 hours' incubation.



GRAPH 2.
Ordinate—amount of bacteria per cc. of blood.
Abscissa—hydrogen ion concentration.

The results of experiments are presented on the 2 accompanying graphs. The first graph shows the amount of bacteria per cubic centimeter of blood that passed through the wall of the stomach into the blood of the right gastro-epiploical vein at a certain time interval. The second graph presents the results of the same experiments, but here we have disregarded the time factor. On this graph we see how the absorption of bacteria goes all the way through in waves and that this absorption is much greater in a stomach with the contents of free hydrochloric acid. Lower pH, higher absorption of the bacteria and vice versa.

Conclusions. 1. The exogenous bacteria are absorbed from an isolated stomach into the blood. 2. The greatest number are obsorbed in the first 15 minutes after the introduction of bacteria into the stomach. 3. The lower pH of the stomach contents, the higher absorption of the bacteria.