the tolerance was determined at intervals during a period of from 5 to 10 months.

The intravenous blood sugar tolerance of the 3 dogs before operation was 1.9, 1.8, and 1.8 gm. of glucose per kilo per hour, respectively. The sugar tolerance now 5 to 10 months after removal of the celiac ganglia is 2.8, 3.4, and 3.8 gm., respectively. The sugar tolerance was increased immediately after the operation. The first determination was made at one week. In one dog the tolerance had increased from 1.8 gm. to 3.8 gm. in one week; in a second, the maximum tolerance of 2.8 gm. was not reached until one month; in the third, the tolerance was not determined until 5 months after the operation, when the tolerance was 2.8 gm.

It is to be noted that the normal tolerance values for the dog found by us are higher than those of Woodyatt, Sansum and Wilder. This may be due to the fact that we used a 5% solution of glucose, instead of a 10 to 50% solution, and in the period of one hour injected a volume sufficient to give the desired dosage per kilo per hour. We used Pfanstiehl glucose for intravenous use, and our dogs were not excited during the injection.

5806

The Titration Curve of Gastric Mucin.

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Fogelson[1] has prepared a "gastric mucin" from the gastric mucosa of hogs which has a relatively high combining power for free hydrochloric acid and which has proved to be effective in relieving the symptoms of peptic ulcer when administered in adequate doses. Kim and Ivy[2] have found that the administration of "gastric mucin" prevents the development of duodenal ulcers in biliary fistula dogs. Since Fogelson did not claim that his "gastric mucin" was a pure product, since with his method of preparation, it is very likely that peptone and other products of incomplete protein digestion are present which may account for some of the acid-combining

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[1] Fogelson, S. J., *J. Am. Med. Assn.*, 1931, **96**, 673.

[2] Kim, M. S., and Ivy, A. C., *J. Am. Med. Assn.*, in press.

properties of his product, and since we were interested in the mechanism by which "gastric mucin" relieved the symptoms of ulcer and apparently promoted healing, we decided to wash Fogelson's mucin more thoroughly with 60% ethyl alcohol and compare the titration curves of the washed and unwashed "mucins".

A weighed quantity (50 gm.) of Fogelson's mucin was extracted 4 times with 500 cc. of 60% ethyl alcohol, in which peptone is soluble and mucin is insoluble. It was found that about 60% of Fogelson's mucin is soluble in 60% ethyl alcohol and 40% is insoluble.

Figure I shows the titration curves of 1 gm. each of Fogelson's

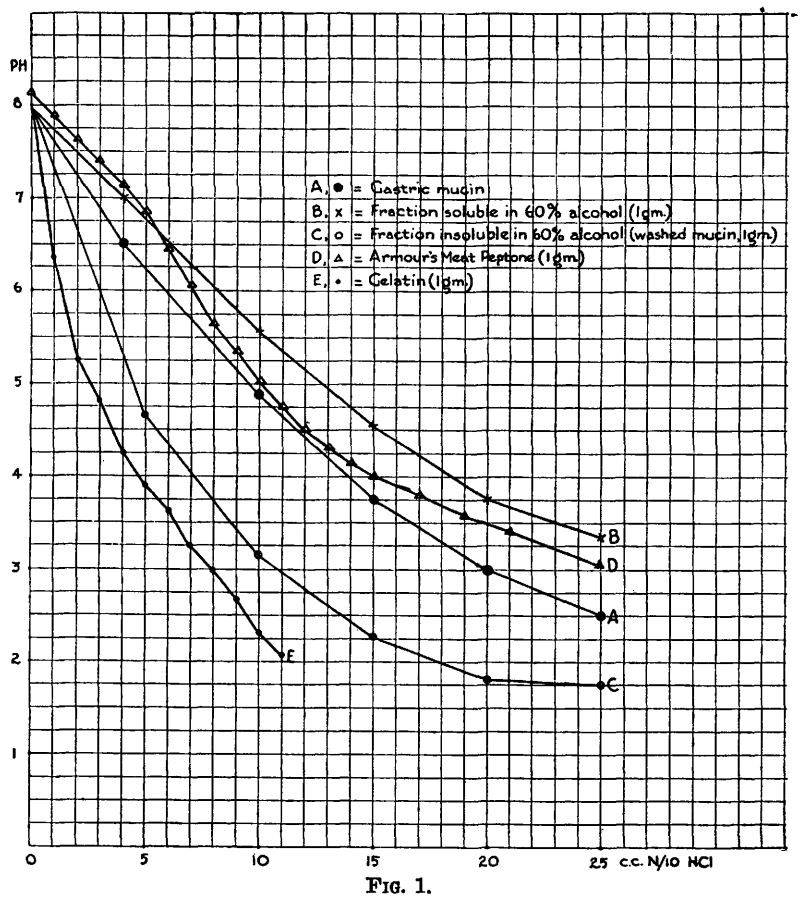

FIG. 1.

gastric mucin (A), the peptone or 60% alcohol soluble fraction (B), the mucin or 60% alcohol insoluble fraction (C), Armour's meat peptone (D), and gelatin (E), in solution in 50 cc. of distilled water. Sufficient sodium hydroxide was added to each solution to give it

a pH of 8.0 before the titration with N/10 HCl was started. This was done because it was found that the pH of different batches of Fogelson's mucin obtained from the manufacturing firm (Armour and Co.) varied from pH 7.5 to 8.0. The manufacturers are requested by Dr. Fogelson not to supply a gastric mucin powder which in solution has a more alkaline pH than 8.0. It is evident from the titration curves that a pH of 4 approximately one-half of the combining power of Fogelson's mucin is due to the presence of the peptone or 60% alcohol soluble fraction.

"Washed gastric mucin" and "gastric peptone" have been prepared in powder form (Wilson and Co.) for the purpose of testing their clinical effectiveness in peptic ulcer.

5807

Effect of Hypertonic Sodium Chloride Intravenously on Intestinal Peristalsis.

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Several investigators[1, 2, 3, 4] have found that the injection of hypertonic sodium chloride, intravenously, increases intestinal tone and motility, and Ross[4] and Orr, Johnstone and Haden[1] have reported favorably on its clinical use in adynamic ileus. Experimentally, these investigators, by the use of balloons or direct observations, have demonstrated unequivocally that following the injection of a hypertonic salt solution the tone and motility of the small intestine is decidedly augmented. But balloon tracings and direct observation of the intestine do not decisively show that the propulsive type of motility of the intestine is augmented. That the propulsive type of motility of the intestine is increased by a certain drug or procedure can only be shown by making observations on the time of passage of a bolus through a measured length of intestine. Accordingly, we devised the following experiment to determine the effect of hyper-

[1] Orr, T. G., Johnstone, P. N., and Haden, R. L., *Surg. Gynec., and Obstet.*, 1931, **52**, 941.

[2] Hughson, W., and Scarff, J. E., *Johns Hopkins Hosp. Bull.*, 1924, **35**, 197.

[3] Dreyer, N. B., and Tsung, Thelma, *J. Pharmacol. and Exp. Therap.*, 1929, **36**, 629.

[4] Ross, J. W., *Canad. Med. Assn. J.*, 1926, **16**, 241.