oligocythemic, hypochromic, normocytic anemia for about 180 days after operation. Two monkeys, more anemic than the others, were each given a 0.1 gm. ampoule of ferric ammonium citrate subcutaneously every other day for one month. Their blood pictures immediately improved markedly and have remained relatively constant. At this time the blood pictures of the gastrectomized and control monkeys are comparable.

TABLE I.

	No. of animals	RBC	Hb	Hemato-crit	Price Jones
Gastrectomized monkeys	5	5,90	12.63	46.0	6.99
Control monkeys	2	6,32	12.94	47.5	6.80

The blood picture for 11 normal monkeys was (Table II):

TABLE II.

Determination	No. of determinations	Mean	Range
Red blood count	24	6,20	(4,72-7,66)
Hemoglobin (Newcomer)	24	12.86	(9.00-17.27)
Hematocrit	24	47.64	(39.0-55.75)
Price-Jones count	23	7.04	(6.79-7.75)

No differences between the bones of the gastrectomized and control monkeys were detected in the X-ray films.

Thus, gastrectomized *Macacus rhesus* monkeys, like the dogs, pigs and rats, do not develop pernicious anemia after gastrectomy, at least, within from 1 to 2 years. However, an iron deficiency anemia, which also appears in dogs, pigs, and rats, may result.

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Fundusectomy Prevents Post-Operative Jejunal Ulcer

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The irritating action of gastric juice, the nutritional state of the animal and the greater susceptibility of jejunal mucosa to irritation by acid (as compared to duodenal mucosa) are the principal factors concerned in the development of jejunal ulcers in dogs prepared by the Exalto-Mann-Williamson technique. To study

the relative rôles played by gastric juice and nutrition the following experiments were performed:

Control Series with "Stock Diet." A group of 42 control dogs were operated by the Mann-Williamson technique and fed a diet consisting of ground meat (parboiled), milk, bread, and cod liver oil. All dogs died with a jejunal ulcer within a period of 17 weeks.

Fundusectomy with "Stock Diet." Eleven dogs were fundusectomized (three-fourths of fundus removed) and then three weeks later the Mann-Williamson operation was performed. The maximum survival time after the second operation was only 15 weeks, but the incidence of ulcer was only 27 per cent. The dogs lost weight rapidly, having been deprived of the greater part of both gastric and pancreatic digestion. It thus became obviously necessary to feed a diet more easily digested and absorbed.

A Series in which Nutrition was Improved: (Special diet). Twenty dogs were similarly operated and fed a more easily assimilated diet consisting of finely ground cooked meat, wheat and barley flour, dried milk, tomato juice, bonemeal, cod liver oil, fresh whole milk, raw ground pancreas (200 gm. daily), fresh ground liver (200 gm. daily), corn syrup (100 gm. daily) and banana flour. This diet was fed three or four times a day, some dogs eating as much as from 4 to 6 lbs. daily. Ten of the dogs lost weight from the start; but only three died with ulcer within 17 weeks, the others dying from other causes than ulcer. Nine of the remaining ten survived from 20 to 58 weeks, but died with ulcer. The other dog was anesthetized at 82 weeks and no ulcer was found. Only two of these dogs lost weight appreciably, most of which resulted after the ulcer started to bleed.

Thus, it is evident that the improvement of nutrition definitely delayed the onset of ulcer and delayed perforation or lethal hemorrhage.

Fundusectomy plus the Special Diet: Thirteen dogs were fundusectomized and placed on the special diet. Three or four weeks later the M. W. operation was performed and the special diet continued. All but one survived from 17 weeks to 2 years; none developed ulcer. Only three lost weight but did not develop ulcer. Seven survived longer than 1 year and 3 months, and six survived more than two years. The gastric acidity returned to normal control values approximately (test meal) in from 6 to 8 months, although the acidity values in two of the six dogs at 2 years were low normals. When the *volume production of acid* in response

to histamine in five of the six dogs surviving two years was studied, it was found to be similar to that of normal dogs, but about one-half of that of the Mann-Williamson dogs. The emptying of the stomach is approximately normal.

Conclusion: Fundusectomy plus a special, easily assimilated, nutritious diet prevents jejunal ulcer (occurrence otherwise from 95-100 per cent) from occurring in dogs having a gastro-jejunostomy and drainage of bile and pancreatic juice into the last 15 cm. of the ileum. The feeding of the special diet alone to dogs so operated only delays the onset of the ulcer, perforation and lethal hemorrhage. This shows that acid is a more important factor in the cause of this type of ulcer than nutrition.