The female dachshund has now been injected one year. Though responding markedly to the growth hormone she has never shown clinical or laboratory evidence of disturbance of carbohydrate metabolism. Urine and blood sugar have remained normal.

From another litter of dogs, of shepherd breed, one female and one male were injected chronically with the same purified growth hormone. The skeletal growth in these dogs was not markedly greater than that of their control, but weight greatly increased. Skin folding was prominent in the female. After about 9 months of injection the female began excreting sugar without being conspicuously sick. She suffered from skin infections. The blood sugar was 228 mg. %. Albumin was present in the urine in a trace or was absent. When injections were stopped she became sugar-free in 2 months. The male litter-mate is still being injected after one year and though obese he is still well and the urine has always been sugar-free.

The absence (or traces only) of albumin in the urine seems to rule out general amyloid degeneration as the cause of the disturbance in sugar metabolism. The evidence indicates that the interrelation of pancreatic islets and anterior pituitary is mediated by the growth hormone and not by the gonad-stimulating principle. Insulin and the growth hormone are thus antagonists, not synergists. It is remarkable that the insular mechanism of normal animals may be injured by simple conveyance of large amounts of the growth hormone. The "constitutional" differences of animals are evident in the differing response of litter-mates to *identical* treatment for, as explained, litter-mates may show no disturbance of carbohydrate metabolism though handled concurrently and identically.

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Demonstration of the Anti-Anemic Factor in Bovine Gastric Juice.

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(Introduced by J. T. Wearn.)

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Following the observation of Castle and his coworkers[1, 2] that normal human gastric juice activates beef to produce an anti-

[1] Castle, W. B., *Am. J. Med. Sci.*, 1929, **178**, 764.

[2] Castle, W. B., and Townsend, W. C., *Am. J. Med. Sci.*, 1929, **178**, 764.

anemic substance, it seemed worthwhile to test bovine gastric juice for this property. The present report deals with a study that is similar to those of Castle but different in that bovine gastric juice was used instead of the stomach contents from human beings.

We obtained fresh gastric juice from the fourth stomach pouch of adult cattle. This material was filtered until a water-clear product was obtained and then incubated with beef at 37°C. for 2 hours. The incubated product was strained and portions administered by stomach tube to 4 patients having classical pernicious anemia.

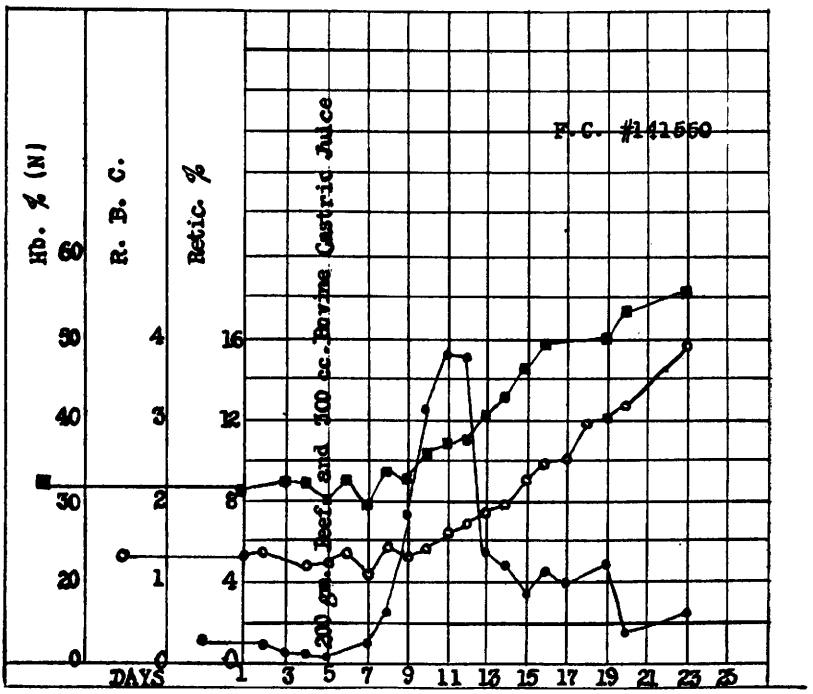

FIG. 1.

The diagram shows a characteristic remission of pernicious anemia (Case 1). The reticulocytes, red blood cells, and the hemoglobin all behaved in the manner described by Minot.[3]

These experiments demonstrate conclusively that the unpurified gastric juice taken from the fourth stomach pouch in cattle contains a potent anti-anemic factor. This work closely parallels the work of Castle and, in addition, makes it possible for us to continue studies without resorting to human sources for gastric juice.

[3] Minot, G. R., Murphy, W. P., and Stetson, R. P., *Am. J. Med. Sci.*, 1928, **175**, 581.