extract administered either with single large doses or with large doses repeated daily for as many as fourteen (14) days, the material being introduced by stomach sound in order to eliminate the taste factor. In another series of experiments the meat extract was mixed with the food which had been refused. The meat extract did not restore the appetite to such animals. On the other hand relatively small amounts of the yeast extract given by stomach produced a prompt recovery of appetite which lasted for from four (4) to nineteen (19) days depending on the amount administered.

Liebig's extract in doses such as were employed in these experiments promotes the flow of gastric juice in normal animals.[2] This fact, together with our own observation that products containing vitamin-B do not promote the flow of saliva, pancreatic juice, or bile,[3] suggests that the recovery of the desire to eat in our animals is not to be ascribed to an increased flow of gastric juice.

124 (1871)

Studies in the physiology of vitamins. IV. Parenteral administration of products containing vitamin-B— mammalian experiments.

By GEORGE R. COWGILL.

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That relief from the symptoms due to a lack of vitamin-B in pigeons may be brought about in a very short time by intramuscular injection of products containing this vitamin has been shown by many investigators. Studies of parenteral administrations of vitamin-B to mammals do not appear to have been made. In the course of our studies into the physiology of this vitamin, using dogs as experimental animals, the protein-free concentrate of vitamin-B from yeast as prepared by the Harris Laboratories

[2] Pawlow, "The Digestive Glands," 1902, 96.

[3] Cowgill, PROCEEDINGS SOC. EXP. BIOL. AND MED., 1921, xviii, 148–149; ibid., 290.

was used, sufficient amounts of this product being generously furnished by Dr. I. Harris.

Intravenous injections of a neutral aqueous solution of this product into dogs showing severe nervous symptoms (clonic spasms, etc.) due to a lack of vitamin-B resulted in a complete cessation of such symptoms, in one instance within a half hour, and in another case within three hours after the injection. In a third instance the relief from symptoms occurred after a longer period. An intravenous injection of the vitamin-containing product was also made into an animal which had lost its appetite after subsisting on the vitamin-free food for a period of days but which showed none of the nervous symptoms characteristic of vitamin-B deficiency. The injection was followed by a complete recovery of appetite which lasted six (6) days.

Intraperitoneal injections were also made. Such an injection, while bringing about relief from nervous symptoms in all cases, did not prevent death from supervening from ten (10) to twelve (12) hours later in those instances where large amounts of material were injected. A control injection into a normal animal resulted in phenomena indicating that the fatal outcome in the instances cited was probably due to the too sudden introduction of large amounts of material and the effect of this procedure on the tissues within the peritoneal cavity.

The effect of subcutaneous injections into such animals will be studied shortly.

125 (1872)

The conductance of unicellular organisms.

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The electrical conductance of bacteria (*B. coli* and *B. butyricus*) unicellular algæ (*Chlorella* sp.) yeasts (*Saccharomyces* sp.) and mammalian red-blood cells has been studied by a method which yields figures for the gross conductance dependable within 1/10 per

[1] Approved for publication by the Surgeon General.