Beijerinck[4] ground boiled potato starch with sand, thus rupturing the membranes. He found that this treatment rendered the starch in part soluble, 60 per cent passing into solution. This agrees very well with the observation above reported in regard to the solubility in cold water of ground unheated starch. The solubility of raw starch in cold water when ground indicates that the observation of Beijerinck does not depend upon depolymerization by heat and water but that soluble starch as such is present in considerable amount in the natural untreated starch grain.

The observations herein recorded offer, it is believed, a key to an explanation of some of the physical properties of gelatinized starch and starch paste as well as of some of the phenomena observed in the gelatinization of starch granules. They must be taken into consideration in future studies on the structure and composition of the starch grain. These and other implications of the observations are still under investigation.

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### Further evidence of the role of hepatic internal secretions in canine anaphylaxis.

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All parts of the gastro-intestinal tract except the oesophagus are thrown into contraction, during typical anaphylactic shock in dogs. These contractions usually begin after a latent period of about forty-five seconds. They usually reach their maximum by the end of two and a half minutes.

The contractions vary in intensity in different parts of the gastro-intestinal tract. In the stomach, they usually increase the

[4] Beijerinck, M. W., Structure of the starch grain. *Koninglijke Akademie van Wetenschappen te Amsterdam.* Proceedings of the Section of Sciences, 1912, xiv, 1107.

intra-gastric pressure about 10 mm. Hg. In the small intestines, a pressure increase of about 25 mm. Hg. is usually observed. In the colon and rectum, an increase of at least 50 mm. Hg.

Gastro-intestinal contractions similar to these are produced by the intravenous injection of histamine.

These contractions of the gastro-intestinal tract do not take place on travenous injection of specific foreign protein into dehepatized sensitized dogs. In contrast with this finding, dehepatization does not abolish the typical gastro-intestinal contractions to histamine.

The gastro-intestinal contractions in intact anaphylactic dogs are not secondary to the anaphylactically decreased arterial blood pressure. Rapid exsanguination, reproducing the characteristic blood pressure fall of canine anaphylaxis, does not throw the gastro-intestinal tract into contraction, at least during the period of our tests (five minutes). The gastro-intestinal contractions in intact anaphylactic dogs are also not secondary to local passive congestion. Ligation of the portal vein, producing a more extreme passive congestion of the gastro-intestinal tract than that observed during typical anaphylactic shock, does not increase the gastro-intestinal tone during the period of our tests. We, therefore, believe the gastro-intestinal contractions in intact anaphylactic dogs, similar to the urinary bladder contractions previously reported,[1] are caused by chemical products (hepatic anaphylatoxins), explosively formed or liberated by the anaphylactic liver, products having a histamine-like effect on the gastro-intestinal musculature.

[1] Manwaring, W. H., Hosepian, V. M., Enright, J. R., and Porter, Dorothy F., PROC. SOC. EXP. BIOL. AND MED., 1924, xxi, 284.