

and in acute and chronic hypersecretion. Although in these affections the spasm may be said to be secondary, nevertheless it is an important factor in their evolution. The gastric disease produces the pyloric spasm, and the latter, by causing stagnation of food, aggravates the primary morbid condition. The manner in which the gastric disease produces the spasm of the pylorus is variable. In many cases excessive secretion of hydrochloric acid is, no doubt, an important factor in the genesis, for we have seen that acid in the duodenum is a stimulus to closing of the pylorus, and the greater the secretion of acid in the stomach the longer the period of gastric closure. In asthenia of the musculature of the body of the stomach, in patients recovering from debilitating diseases, such as typhoid fever and influenza, there is frequently stagnation of food, particularly after the ingestion of a large meal. This, together with hypoperistalsis, may be a cause of pyloric spasm, which would lengthen the period of gastric digestion and augment the myasthenia. In ulcer and in hyperesthenic gastritis the spasm may be due to the hyperesthesia of the mucosa, which is usually present in these diseases.

*Symptoms.*—The principal symptoms of pyloric spasm are stagnation, or retention of food, and the results thereof. The symptoms caused by the spasm, whether primary or secondary, are wholly digestive, vomiting, or the evacuation of the stomach by relaxation of the pylorus, as a rule gives immediate relief.

In primary spasm of the pylorus there are no subjective symptoms as long as the stomach is empty. Shock, worry, or other mental disturbance during digestion, or the ingestion of spices or very cold food may precipitate an attack. The most frequent subjective symptoms are pain, flatulency and belching. Pain when present is usually of a colicky nature, and situated in the region of the pylorus. In some cases, however, it is more diffuse, being felt over the epigastrium, due, no doubt, to accompanying gastrospasm. Flatulency is usually more subjective than objective. The patient complains of a sensation of constriction and of fulness in the epigastrium. On physical examination, however, in many cases no distension of the epigastric region is present. Belching, in some degree, is a common manifestation, as it is voluntarily produced with the object of relieving the gastric distress, even in the absence of flatulency. These three symptoms, pain in the region of the pylorus, flatulency and belching, occurring during digestion, should always suggest pyloric spasm. If in addition the symp-