

In health, for the first three-quarters of an hour after food is received into the stomach, the hydrochloric acid of the gastric juice enters into combination with the albuminates of the food, so that no free acid is present. During this time the digestion of the starchy food is actively progressing, and is only arrested by the presence of free hydrochloric acid, nearly an hour after the meal is taken. In hyperacidity, or a hypersecretion of the gastric juice, free hydrochloric acid is present sooner than normal and arrests the digestion of the starches prematurely, and thus increases their liability to fermentation. In such circumstances the filtrate of the stomach's contents will give a reaction with Lugol's solution, proving that the digestion of starch has been interfered with; normally, no such reaction is obtained. The imperfect change in the starch might be due either to a deficiency of ptyalin, or an excess of acid; and as the former is probably never defective, the occurrence of the reaction practically demonstrates excess of hydrochloric acid in the stomach.

The second function of the stomach, viz., the prevention of fermentation and decomposition, is one of the most important. While the digestion may be effected by the pancreatic and other fluids, none of them have the anti-fermentative powers of the gastric juice. With our food we swallow innumerable micro-organisms, especially those that cause fermentation and decomposition, but also pathogenic germs as well. Some of these are destroyed in the acid medium in the stomach, others are inhibited: this is true especially of the fermentation germs. Many, however, especially the pathogenic organisms or their spores, unfortunately pass through unaffected.

Persons are occasionally met with in whom no hydrochloric acid is found in the gastric juice, and who, nevertheless, have fair digestion: in such the motor function of the stomach seems to be abnormally vigorous, causing the food to be discharged into the duodenum before decomposition can take place.

The amount of hydrochloric acid secreted increases in proportion to the amount of albuminous constituents in the meal, the maximum amount being reached about an hour after a light meal and four or five hours after a heavy one.

In health the duration of digestion varies with

the quantity and quality of the food taken. In about six hours after a medium meal of mixed character the stomach will be found empty, or to contain only some shreds of food; even after a full meal the stomach should be quite empty in seven hours. In infants the duration in health is probably not longer than one or two hours.

In the intervals between digestion, the stomach contains a small amount of clear neutral fluid, without hydrochloric acid or pepsin.

Derangements of any function of the stomach are characterized in some by few symptoms, while in others disturbances of the greatest diversity are produced; such as neurasthenia, vertigo, insomnia, epileptiform convulsions, headache, catarrhal affections of the respiratory tract, pseudo-angina, joint affections of a rheumatic nature, rigors, etc. It doubtless occurs in the experience of all to meet with cases of these various kinds caused by defective digestion, the true cause often eluding our search.

In many persons with grave derangement of the gastric functions, complaint is made only of slight disturbance of general health, while they assure us that their digestion is quite good. This variety of symptoms is to be accounted for partly by the variation in the sensitiveness of the stomach, partly by the greater susceptibility of other organs to reflex disturbances, and partly by the almost infinite variety in the character of the poisons that result from the decomposition of the food. That many different poisons may be formed in the digestive tract and excreted by the kidneys has been well shown by Bouchard. He found that the urine of a perfectly healthy peasant, employed in the open air, produced no symptoms when subcutaneously injected into a mouse; but if the patient's digestion were slightly deranged, so that the tongue became furred, the taste a little foul, and the bowels constipated, the subcutaneous injection of the urine then resulted in convulsions in some instances, while at other times coma was produced. Entirely different poisons must have been elaborated in the stomach and intestines to produce such a variety of effects. And of what a variety of symptoms in dyspepsia patients may be relieved by an effective purge—mental depression, headache, insomnia, fugitive pains, nervousness, ill-temper, etc.