

also in the hope that a discussion will be started which will elicit much valuable information. With tubercular, cancerous, and diphtheritic ulcers this paper has nothing to do. We propose to discuss simple ulceration alone.

In the production of duodenal ulceration, the same causes operate as in gastric. They are peptic in origin; that is to say, they are produced by the action of the gastric juice on the mucous membrane. The truth of this statement is, to my mind, demonstrated by the fact that these ulcers are not found lower in the duodenum than the biliary papilla, where the alkaline bile flowing into the bowel neutralizes the acid secretion of the stomach. Samuel Fenwick has suggested that the different nature of the ulcers found below the orifice of the bile duct is due to the greater development there of the lymphatic system. It is implied in this that the gastric juice has no particular influence in the production of gastric ulceration, that these ulcers are all inflammatory, and that they would be more frequent in the lower bowel if the irritants producing inflammation were not more effectually carried off by the lymphatics.

That the gastric juice is capable, however, of producing ulceration is shown in the fact of the post-mortem digestion of the stomach. It may be objected to this that the post-mortem stomach is dead tissue, but the condition of that particular part of the stomach wall subsequently ulcerated is in a condition of lowered vitality from some cause. The difference between it and dead tissue is of one degree only.

Granted, then, that these ulcers are peptic in origin, it may be very justly asked; Why is not the healthy stomach digested? It might with equal right be asked, Why does not the pancreatic secretion digest its own cells, duct, or the duodenum into which it empties? Why does it limit its action to the contents of that canal? Going to the invertebrata for an example, Ewald has pointed out that there is a mollusc, the *dolium galea*, which secretes harmlessly to itself pure sulphuric acid, while the dead animal is at once destroyed by that acid. Can we tell why this is so? The only answer that can be given at present is that the stomach is protected by the healthy action of the living cell. Cell life and action of each viscus varies with the nature of the work it has to perform, and so long as this healthy vital action exists we need fear nothing.

Pavy, in 1868, asserted that the stomach was protected by the alkalinity of the blood. Cohnheim accepted this and elaborated it, pointing out that malignant tumors of the stomach were protected and enabled to grow by their profuse alkaline blood supply. That this cannot be accepted as a reason is seen in the following facts :

(1) The superficial layers of the mucous membrane are not alkaline, but acid in reaction.