

is called, or the regurgitation of food which has been largely digested, is one of the most serious symptoms which can be met with, in cases of obstruction; because, for the reasons which have been given, it is evident that the obstruction is complete, and that the patient's condition is consequently most grave.

Returning now, however, to the progress of digestion, the chyme passes from the duodenum onwards into the jejunum, or next portion of the small intestine. Here the mucous membrane is thrown up into small, finger-like processes, giving the surface an appearance, to the naked eye, not unlike that of velvet. The processes are called VILLI, and consist of fine connective tissue in which there are numerous blood vessels, one or more small arteries entering each *villus* and breaking up into tiny capillaries, which are collected again into one or more small veins which leave the *villus* to join with other veins in the wall of the intestine. In the centre of each of these finger-like processes is a straight, or sometimes branched, canal which is the beginning of a lymphatic vessel, and which, passing out of the *villus* at its base, unites with other lymphatics in the wall of the intestine. These lymphatics, uniting together, form a central canal which, passing up along the front of the spinal column, opens into a large vein behind and below the left collar bone. The function of these lymphatic vessels is to take up the fat from the food in the intestines, and from the milky appearance therefore of their contents, the lymphatics in the intestines are called the LACTEALS. The blood vessels in the villi suck up the other portions of the digested food—the peptones, the sugars, and the salts—which, as we have seen, are the products of the digested food. The chief part, therefore, which the small intestine takes in the work of digestion is the absorption into the blood of the digested materials of the food, which, after further changes are conveyed, by means of the circulation, to every tissue—each of which takes from the blood the special material which it requires for its own sustenance and support.

After the food has passed from the duodenum, it is probable that comparatively little further change takes place in its digestion, but the blood flowing from the intestines carry into the Liver the products of digestion in the shape of the peptones, the salts and the sugars which it has derived from the chyme, and as we shall shortly see, this organ takes a very impor-

tant part in the further preparation of these materials for the use of the tissues. Meanwhile, the remaining contents of the small intestine are forced onwards by the peristaltic contraction of the canal which has already been described, and passing along to the end of the small intestine, enter, in a still semi-fluid condition, the next part of the alimentary canal, which is known as the LARGE INTESTINE. This section of the canal is much larger and more fixed than that of any other portion; it first passes up the right side of the abdomen to the margin of the ribs, then directly across the upper part of the abdomen and then down the left side, until, in front of the hip bone, it makes a curve like that of the letter "S"—from which it is termed the *Sigmoid Flexure*—and then becomes what is known as the RECTUM, the final part of the alimentary canal. The structure of the large intestine is the same as that of the smaller gut, except that the muscular coat is stronger longitudinally in the former than in the latter. The chief function of the large intestine is to absorb all that is left of the useful materials in the digested food—and especially the *Water*. Consequently, as the refuse material—the part which is of no available use to the economy—passes onwards, this becomes more and more solid as the water which it contains is rapidly absorbed. And it seems to be certain that the secretions of the large intestine, instead of being digestive fluids, as in the other parts of the alimentary canal, are more or less poisonous materials excreted from the blood and thus removed from the body together with the refuse materials of the food.

There are valuable lessons to be learned from the processes of Digestion in health as to the conditions which take place in disease. It is, in the first place, certain that patients who suffer from constipation cannot digest their food with complete comfort and advantage. They suffer from flatulence, acidity, heartburn and bilious attacks, and a multitude of different symptoms, with more or less pain and more or less inclination to be sick after their meals. It is therefore most important that the excretions of all sick persons should be most carefully regulated, and that any tendency to constipation should be reported to the doctor and consequently obviated by appropriate medicines or other treatment.

(To be continued.)

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