

necessity of the free mixing of the food with the saliva in the mouth, in order that the conversion of starchy matter into sugar may be assisted as much as possible.

By the churning action of the stomach which has been already described, the process of mastication is carried one step further; the food is still more finely divided and thoroughly mixed with the gastric juice, and so is reduced to a semi-fluid consistency.

During this time, the proteids of the food are acted upon, whether they have been solidified by cooking—such, for example, as is the case with the white of a boiled egg—or are still in a liquid form. The gastric juice acts only on the proteids; it has no action on the carbo-hydrates or on the fats. It, however, assists towards the digestion of these materials because by dissolving the proteids in the food it breaks up the material and so sets the other “food stuffs” free. The warmth of the stomach also assists by melting the fats and thus reducing them to an oily consistence, which renders them more easily absorbed. During digestion, the ring-like muscles around the two orifices of the stomach—that, namely, leading from the œsophagus into the stomach and that leading from the stomach into the intestines—are tightly closed; by which means regurgitation of the half digested food into the œsophagus is prevented, as well as its passage onwards into the intestines. In cases, however, in which there is indigestion, and the consequent development of much gas in the stomach, the cardiac or upper opening will relax and permit the stomach to expel the gas, a process to which the name of “eructation” is given. So, also, when the food is sufficiently digested and fluid, the pyloric or lower muscular orifice will relax, and thus permit the onward passage of the food. After a certain time, which may vary from one to three or four hours, according to the quantity and character of the food to be digested, the contents of the stomach which we have seen are now almost fluid, and for which the technical name of CHYME is used, pass on through the pyloric opening of the stomach into the next part of the alimentary canal, to which the name of *Duodenum* is given. Here the chyme becomes acted upon by two very different fluids, the PANCREATIC JUICE and the BILE—the secretions respectively of the PANCREAS and of the LIVER—and both of which pass into the duodenum by means of fine ducts or tubes leading from their respective glands. The

Pancreas is a long, largish body, like the salivary glands in structure, and its larger end, or head, lies in close contact with the duodenum. The Pancreatic juice is a colourless, rather thick and sticky fluid, containing ferments by means of which it is enabled to act upon three classes of “food stuffs.” For example, it changes starch to sugar, as we have already seen that the saliva does; it changes proteids into peptones, as the gastric juice can do; and it also acts on the fats, decomposing these into an acid and glycerine.

Bile is formed by the Liver, and is carried from it into the duodenum by a tube called the *Bile Duct*. Before this Duct leaves the Liver it gives off a short side branch which leads to the Gall Bladder—a small bag situated at the front of the under surface of the Liver, and which serves as a reservoir for the bile which is secreted by the organ and which is not immediately required for the processes of digestion. Sometimes, as we shall see hereafter, the Bile collected in this reservoir becomes thickened and less fluid than usual, and then deposits crystals, which, uniting together, form small concretions which are known by the name of Gall Stones. Sometimes these stones become so numerous as to fill the gall bladder, and then by their pressure on the walls they may set up ulceration and inflammatory thickening or disease around the Gall Bladder, or the Liver or the Duodenum; or one of the stones may be pressed up into the gall duct, and by choking this up, prevent the passage of the Bile into the duodenum. Then violent pain is usually caused, which is sometimes so great as to render the patient collapsed, and to which the name of *Biliary Colic* is given. If the stone becomes quite fixed in the canal the patient usually suffers from *Jaundice*, or yellowness of the skin due to the Bile becoming absorbed into the blood, and thus tinging the tissues yellow. Sometimes the stone either slips back into the Gall Bladder, or, with extreme pain to the patient, squeezes its way along the narrow duct and so escapes into the duodenum. In either of these events, the pain may cease as suddenly as it began, and the patient may seem to be quite well again. But, as a rule, so much irritation has been set up in the gall duct that its lining membrane swells, and temporarily closes the duct, and thus, again, an attack of *Jaundice* may supervene.

(To be continued.)

[previous page](#)

[next page](#)