AN INAUGURAL DISSERTATION
ON
Digestion
SUBMITTED TO THE
President, Board of Trustees, and Medical Faculty
OF THE
UNIVERSITY OF NASHVILLE,
FOR THE DEGREE OF
DOCTOR OF MEDICINE.
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Spring Hill, Maury Co., Tennessee
1859

MEDICAL JOURNAL OFFICE,
NASHVILLE.
Digestion.

The word digestion, is derived from the Latin word, Digestio, which means to dissolve, and by digestion is meant the changes which alimentary substances undergo, when taken into the digestive canal. The object of this is to convert the alimentary substances, into two parts: one of which is to renew the waste caused by the decomposition of the animal tissue; the other when deprived of its nutritious properties, carried through the alimentary canal, and rejected from the body. This function is composed of a series of organic actions, differing according to the particular organization of the animal. In man they are eight in number, viz. 1. Prehension, 2. Mastication, 3. Insalivation, 4. Deglutition,
5. Action of the Stomach, 6. action of the Large Intestine, 7. action of the Small Intestine 8. Evolution of the Faeces. By Prehension is meant, the act of carrying the food to the mouth, and placing it within its cavity. Mastication is the act of chewing up or grinding the food, when taken into the mouth. Mastication is exercised by the tongue, cheeks, and lips, which place the food between the teeth, and by the actions of the muscles of mastication, and the lower jaw; it is cut and ground into fine particles by the teeth. During the whole of this process, the food is being continually moistened by saliva which softens it and partially
digests it; preparing it for deglutition. Insalivation is the Parotid, Submaxillary, and Sublingual, glands会引起 its secretion through the ducts of Steno, Wharton, and Bernard, upon whatever is taken into the mouth to be masticated. It is believed by some Physiologists that insalivation, and proper mastication, is as essential to digestion as the proper performance of any other function, relating to digestion. It is owing to improper mastication, and insalivation, that there are so many dyspeptics. Food hastily swallowed, without thorough mastication, and insalivation is very hard to decompose when taken into the stomach and thus renders
the performances of the stomach, with its great exertions to digestion. De
glutition is the act by which substances are passed from the mouth into the stomach through the pharynx and esophagus. De
glutition is very complicated in its character; requiring the action of a great many muscles, some of which are called into action voluntarily and some involuntarily. When the food has been sufficiently reduced by the mouth, it is carried back until it has passed the anterior palatine arch. This is done by entire voluntary movement. Very by the approximation of the tongue and hard palate. In the second stage of deglutition, the tongue is carried still farther back.
wards, and the larynx is drawn upwards and forwards under the root of the tongue, so that the epiglottis is passed over the cornu glossoe. The muscles of the anterior palatine arch contract, after the morsel has passed it, and push the bolus backwards. Then the muscle of the posterior arch contract in such a manner, as to force the food down to the pharynx, which is said to receive it. The most of these acts are voluntary, but some are automatic. The third stage of deglutition, is after the food has reached the pharynx. The morsel after it has passed into the pharynx, is forced downwards by the constrictors of the pharynx and is carried through the oesoph-
ages in the same manner. The act of deglutition is wholly involuntary in the third stage. At the cardiac extremity of the esophagus, there is a sort of a sphincter, which keeps the food from passing back, when pushed into the stomach. To describe the actions of the stomach, it is necessary to give the anatomy of the stomach to some extent. When the stomach is in a normal state, the inner coat of the stomach is of a deep pink color, but becomes pale as it is distended. The inner coat of the stomach is also composed of very small tubes, which are called villi. These villi are very vascular, and are very easily excited; enlarging or diminishing as they are the more or less excited. These villi
are for the purpose of forming out a pure, colorless, and slightly viscid fluid. This fluid is very acid. (But it is the anatomy of the stomach.)

The stomach is composed of a muscular coat which is very essential to digestion. The fasciculi of the muscular coat of the stomach, are so arranged as to contract or relax according to the necessity of their proper duties. After the food has passed into the stomach by continued waves through the oesophagus, it passes from right to left, around the splenic end of the stomach; then from left to right, around the larger curvature of the stomach, to the pyloric end; then from right to left around the smaller
curvature, thus keeping up a continued revolution, as long as any particles of food remain. The fasciculi of muscles (before spoken of) cause these revolutions or agitations of the bolus, by their contractions and relaxations. The stomach has been frequently compared to an hour glass in form; and the pyloric end designed for the deposit of the partially digested food. As the bolus is thus revolving in the stomach, the little cells are excited and begin to pour out their contents, called Gastro juice. This fluid coming in contact with the outer surface of the bolus, penetrates and moistens it.
also decomposing it as it were, and changing it into chyme. This chyme or decomposed food is deposited in the pyloris, by being scraped off, as the bolus makes its turning. Then the undigested part is again saturated with this fluid, and is also changed into chyme. Thus this chemical operation goes on until the whole of the contents of the stomach is changed into chyme, except that which cannot be changed by any means. Some articles of food are harder of digestion than others, and require more of the gastric fluid to dissolve it. Thus this fluid is increased or diminished, as necessity may require.
After the bulky matter, or chyme, begins to make its exit from the pyloris into the duodenum, the stomach begins to contract, and thus forces out the entire contents into the duodenum. The chyme passes much more rapidly at last than at first, into the duodenum, or second stomach, as it is sometimes called. Much could be said in regard to the nervous system connected with digestion, as it is wholly governed by the nervous power. But as simple digestion is the subject, it must be strictly adhered to. The next thing looked to is the action of the intestinal tube. And the small intestines are the
first to be noticed. After the chyme has passed into the duodenum, the pancreas, and the biliary ducts, pour out their contents upon the chyme, causing it to undergo another change, similar to the change on entering the stomach. After the chemical process goes on in the duodenum, the chyme is changed into another different fluid: called chyle. This chyle is so diluted that it is very easily absorbed. And the lacteals of which the duodenum is composed are continually drinking in this chyle as it passes, and depositing it in the receptaculum chyli; and it is then conducted to the circulation by the thoracic duct; the thoracic duct emptying itself
into the left subclavian vein. The chyle is not entirely digested until it has passed into the lungs and there deprived of its carbonic and other impurities. The contents of the duodenum is not entirely taken up by the lacteals, but a great deal of matter remains. The most of this substance is excrementitious matter which passes down the intestinal canal. As this substance traverses the intestinal canal, after leaving the duodenum, the most or all of the nutritive particles are absorbed, by the absorbents, or lacteals, of the small and large intestines, leaving nothing but the excrementitious matter which is passed.
out by the rectum. To describe the
the actions of the small and large
intestines, after the duodenum
has performed its functions, would
be one and the same thing, as
they do very little towards digestion
when the food is taken into the
digestive canal by the mouth.
But frequently food is taken into
the system, per anum. Then
digestion is compelled to be some-
what different. In fact the process
which substances undergo when cast
into the rectum, cannot be called
digestion properly. For it is only
fluids and mucilaginous substances
that can give nutriment to the
system when taken into the
rectum. And this is done by the
lacteals absorbing the nutritious particles, and distributing them to the system. It may be in place here to mention that there are nutritious substances, taken by the mouth, which undergo no digestion; but are immediately absorbed. These substances are mostly of the oleaginous class, requiring only to be mixed with the different fluids, for the separation of their particles, for easy absorption.

Much has been said which is connected with digestion; but the alimentary canal, and its actions, have been the discussion, which are the chief principles to digestion.