

OUR PRIZE COMPETITION.

DEFINE DIGESTION AND WHAT THE DIGESTIVE APPARATUS CONSISTS OF.

We have pleasure in awarding the prize this week to Miss S. F. Rossiter, Sisters' Quarters, Haslar, Hants.

PRIZE PAPER.

Digestion is the function by which the proximate principles of food—proteins, fats, carbohydrates, water and salts, are rendered soluble and ready for assimilation, thus supplying the vital material for the upkeep of metabolism.

The anatomical structures concerned are combined and named the Alimentary Tract, and include the following:—

Mouth—Containing teeth, salivary glands, tongue, and muscles concerned in deglutition.

Oesophagus—Tube 18 inches long, running from pharynx behind trachea to cardiac orifice of stomach.

Stomach—Muscular organ situated in thorax to the left below heart.

Small Intestine—Consisting of three parts (1) Jejunum, (2) Duodenum, (3) Ileum.

Large Intestine—Consisting of (1) Cæcum, (2) descending transverse and ascending Colon, and (3) Rectum closed by Sphincter.

The Physiological action in digestion is performed by various juices secreted by glands situated in different parts of the alimentary tract and containing ferments with specific action on certain foodstuffs.

From the foregoing it will be seen that the process of digestion is therefore dependent upon physiological action in a definite specially constructed tract, the combination being as follows:—

Food is taken into mouth, masticated by the teeth, mixed with saliva which is secreted by glands—Parotid, situated below the ear, opening into cheek on inner side; Submaxillary, under lower jaw; Sublingual, under tongue, the active principle of which is a ferment called Ptyalin, which acts in an alkaline medium and converts carbo-hydrates into a form of sugar. After being mixed into a bolus by the tongue, palate, and cheek muscles it is forced by muscles of deglutition over epiglottis into oesophagus and by the peristaltic contraction of this structure it is passed through cardiac orifice into stomach. Here it is acted upon by the gastric juices which contain two ferments, Pepsin and Rennin, secreted by glands in mucous membrane lining stomach. Pepsin acts upon proteins, converting them into soluble bodies called peptones. Rennin breaks down curds. Certain foodstuffs require

an acid medium for ferments to act in, and this is supplied by the secretion of hydrochloric acid by glands near the cardiac end of stomach. The partially digested food is now known as Chyme and passes through Pyloric Orifice into the Duodenum, where it meets with the bile and pancreatic juices. Bile is secreted by the liver and enters the intestine by the bile-duct; it contains no ferment and emulsifies fats and prevents putrefaction during digestive process. The pancreatic juices enter by pancreatic duct and contain four ferments—(1) Trypsin, (2) Steapsin, (3) Amylopsin, (4) a ferment allied to Rennin.

Trypsin completes the action of Pepsin upon peptones. Steapsin aids the Bile, and Amylopsin carries on the work commenced by Ptyalin. Rennin and the last ferment act conjointly upon curds.

The mixture is now known as Chyle and enters the Jejunum and Ileum, which are lined by folds of mucous-membrane called valvulæ-coniventes, the arrangement of folds allowing of a greater surface for absorption. Here also are found finger-like projections called villi, containing lacteals and lymphatics. The lacteals absorb the peptones directly into blood, and the lymphatics absorb the emulsified fats and convey them to thoracic duct and thence to blood stream via the inferior venæ-cavæ. The residue, which consists of partly soluble peptones and waste, passes into large intestine, where the last secretion, Succus Entericus, is found. This contains a ferment called Erepsin, which completes solution of peptones. Any remaining waste or undigested food is carried by the peristaltic action of the muscular coat of intestine to the rectum, where it is evacuated as fæces. This last action is controlled by a strong muscular band, the Sphincter-Ani.

HONOURABLE MENTION.

The following competitors receive honourable mention.—Miss Henrietta Ballard, Miss M. M. G. Bielby, Miss Marion Zeigler, Miss E. M. Hooker, Miss Eliza Noble.

Miss Bielby describes the stomach as a dilatation of the alimentary canal, its larger or cardiac end being continuous with the oesophagus, the narrow end, or pylorus, opening into the small intestine.

QUESTION FOR NEXT WEEK.

What advice would you give to a mother if you noticed children with impetigo in a house you were attending (a) to remedy the children already infected, (b) to prevent spread of infection?

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