(œsophagoscopes, etc.) are passed. This position is useful, however, after the bougie has entered the upper portion of the œsophagus by rendering it possible to advance and palpate in a straight line. If a stomach-tube is to be passed through the nose, the former should be slowly forced downward as soon as it has reached the posterior pharyngeal wall. A finger passed through the mouth or a blunt hook may serve as a guide. (König.)

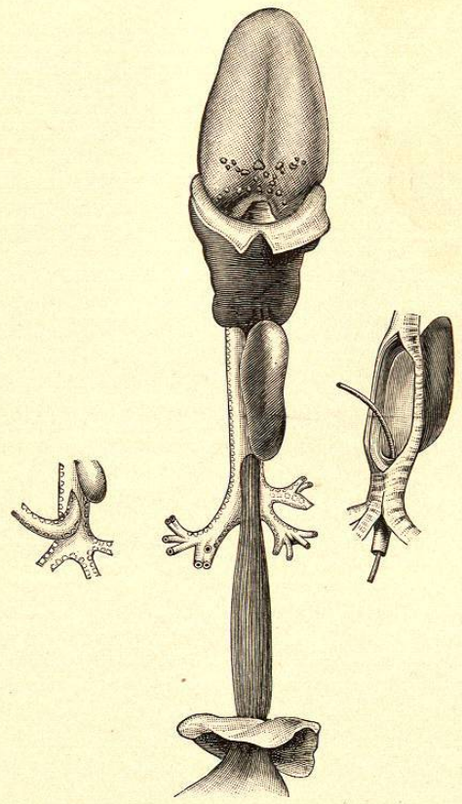
CHAPTER II.

MALFORMATIONS OF THE ŒSOPHAGUS.

By Dr. G. LOTHEISSEN.

Very few of the congenital deformities of the œsophagus possess practical significance. They will therefore be only briefly mentioned. There are usually other deformities presented at the same time, as a

Fig. 3.



Congenital division of the œsophagus and œsophageal tracheal fistula.

result of which children are born dead (35 per cent.) or die within the first week (about 88 per cent. of those born alive). Furthermore, such

children have so little vitality that only in rare cases would they survive any possible therapeutic measures.

The most common deformity is division of the œsophagus into two portions, usually blind pouches, with or without communication with the trachea. (Fig. 3.) The upper portion may be normally developed or like a diverticulum, forming a saccular dilatation terminating a little above the bifurcation of the trachea. In rare cases there is a small fistula communicating with the trachea. The lower portion, proceeding upward from the stomach, is frequently very short and narrow, and either terminates blindly above or passes directly into the tracheal tube. The posterior wall of the latter may be absent to a greater or less extent. The lower portion does not communicate with the upper portion, or may be connected with the latter by a fibrous cord. Occasionally there are found on the posterior wall of the trachea a few muscular bands which connect the upper and lower portions. At times the lower portion is represented only by a fibrous cord. In such cases there is naturally no communication with the trachea.

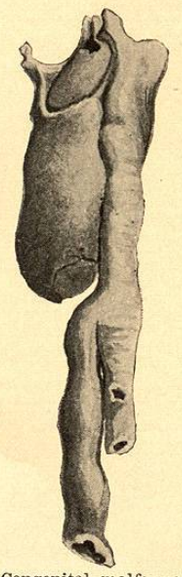
The origin of this deformity is explained by the development of the œsophagus and the trachea. The trachea and lungs are developed from the ventral portion of the foregut. For some time there is a cleft between the trachea and œosophagus before separation becomes complete (about the end of the first fœtal month). Disturbance of development during this period may produce the various forms of deformity.

In such cases children cannot swallow at all or the food flows out through the nose. During inspiration a gurgling sound can be heard (Lefour), which is due to the communication between the lower portion and the trachea. In several cases closure of the œsophagus was determined by examination with a bougie. Children continue to live only a short time (thirteen days at the longest); they die of inanition, as no nourishment can enter the stomach, or of pneumonia caused by food from the upper portion or gastric mucus from the lower portion entering the lungs.

Provided no other deformity exists, gastrostomy may accomplish some good. If the child survives the operation and gains strength, it might be possible by passing bougies from the stomach to determine how high the lower portion of the œsophagus extended. It might also be possible to pass metal catheters into the upper and lower portions and take an *x*-ray picture. If the distance between the two parts was not very great—if, for example, there was only a diaphragm between the two parts—an attempt might be made to divide the latter by a kind of internal œsophagotomy, followed by dilatation of the stricture. According to v. Hacker's suggestion, the septum between the two blind sacs might be crushed through with appropriate instruments similar to the method employed by v. Bergmann in a case of stricture near the cardia. In this connection a kind of Murphy button has been considered, the halves of which are to be passed from above and through the gastric fistula, respectively. If the diaphragm is situated

rather high, external œsophagotomy might facilitate the operation. Such interference would be especially indicated in cases in which no communication with the trachea could be discovered. But even where there is a communication with the trachea the contents of the œsophagus do not necessarily enter the trachea, as the walls of the fistula usually lie close together. (Lamb.) Sédillot believes that fistulæ can heal spontaneously. This is improbable. If there were only a communication between the trachea and the œsophagus, it might be possible to feed children with a stomach-tube till they were sufficiently strong to undergo gastrostomy.

FIG. 4.



Congenital malformation of the œsophagus. Upper portion ends in a culde-sac; the lower portion opens into the trachea (Harvard Med. School, Warren Museum).

Disregarding complete absence of the œsophagus, the form of deformity described represents a type from which the other forms can readily be derived. It is perfectly conceivable that the œsophagus might be divided into two portions, separated only by a transverse membrane (not positively observed, Ténon's case), or that at this site there remained a constriction. Brenner's case probably belongs to this group. In a twenty-one year old woman he found an annular fold, and below the latter an œsophagotracheal fistula. After performing external œsophagotomy he split the fold longitudinally and sutured it transversely. The fistula was sutured after dissecting away the mucous membrane.

Congenital strictures have been confirmed only twice on post-mortem examination in children. (Turner, Hirschsprung.) More frequently there have been found strictures in the bodies of individuals who had suffered from difficulty of swallowing since earliest childhood. They were annular or tubular in shape and situated in the upper portion of the œsophagus. (E. Horne, Cassau, Zenker, Schneider.) They occurred in elderly people in whom the disturbances had not undergone any change in the course of years; no trace of cicatricial formation could be discovered. Very similar strictures have been observed in the *lowest* portion of the œsophagus. To this category belong the cases of Turner, Crary, Mayer, and Hirschsprung. The symptoms, diagnosis, and treatment of these cases are the same as in those of acquired stricture. There is more prospect of obtaining permanent results by the treatment, as actual scar-tissue is absent and there is thus no tendency to recur.

Those cases may be mentioned also in which the œsophagus is normally developed, but in which there is an œsophagotracheal fistula.