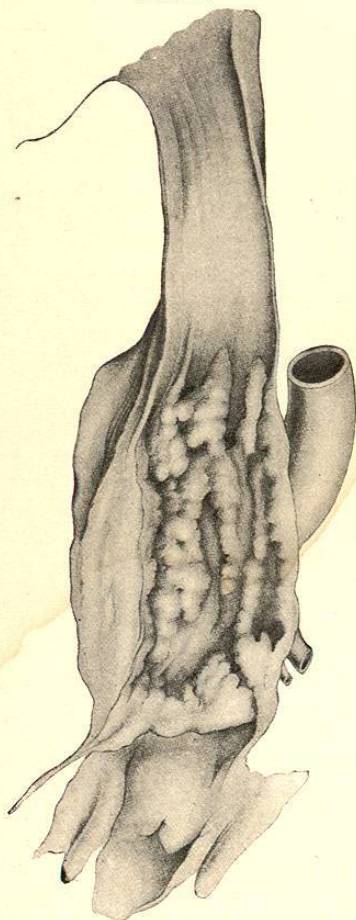


Carcinoma of the œsophagus generally occurs as the squamous cell variety. Instances of cylindrical cell carcinoma originating in the glandular epithelium have been described. The colloid form has also been observed. (Butlin, Coats, Fischer.) Carcinoma usually occurs in the form of an island or a girdle (Zenker), but several areas may be attacked at the same time. Not infrequently a point situated lower down is subsequently affected. Direct inoculation may be produced

FIG. 41.



Carcinoma of the œsophagus.

by swallowing fragments of carcinomatous tissue or by manipulation with bougies. These tumors may become so large that the entire œsophagus is involved in the carcinomatous process (cases of Baillie, Ribbentrop, Petri, Zenker, Gernert, and Narath). It is possible that in such cases transmission occurred along the lymphatics.

Carcinoma is generally situated at the constrictions corresponding to the cricoid cartilage, bifurcation of the trachea, and the hiatus of the œsophagus, which favors the view that there is some connection between carcinomatous proliferation and repeated irritation, as the latter would be most severe at such portions of the œsophageal wall.

As strictures are found at these sites, it is possible that carcinoma develops in a cicatricial stricture or in any other scar, such as may follow the lesion produced by a foreign body. Absolutely unquestionable observations do not exist.

The statements formerly made regarding the frequency of carcinoma at different levels were contradictory (Mackenzie found that carcinoma was most frequent in the upper third; other observers found it most frequent in the lower third).

At present there can hardly be any doubt that the site of the bifurcation is the favorite site for carcinoma. v. Hacker found that in 100 cases of carcinoma of the upper digestive tract, corroborated by œsophagoscopy and microscopical examination, the cervical portion was involved in 10 cases, the region of the bifurcation in 40 cases, the hiatus in 30 cases, the cardiac end of the stomach in 20 cases. Including 31 cases of gastrostomy for carcinoma

in which the site was positively determined, the 131 cases of v. Hacker are divided as follows: 13 in the cervical portion, 9.92 per cent.; 53 in the region of the bifurcation, 40.46 per cent.; 36 in the hiatus, 27.49 per cent.; 29 in the cardia, 22.13 per cent.

Taken together carcinoma of the hiatus and of the cardia would give the highest figure, 49.62 per cent. The fact that these two forms are not sharply distinguishable explains the former statement that the lower third of the œsophagus is more frequently diseased. Attention was first drawn to this by v. Hacker.

A rare case of carcinoma has been described (Newton Pitt) which developed in the floor of an œsophageal diverticulum. Carcinoma frequently develops also in the vicinity of traction diverticula. (Ritter.)

A predisposition to and an incidental cause in the occurrence of carcinoma must be distinguished. The former is supposed to be due to descent from tuberculous ancestry. Carcinoma of the œsophagus and pulmonary tuberculosis are not infrequently associated. The question suggests itself, whether carcinomatous cachexia does not prepare a suitable soil for phthisis; and conversely carcinoma has been observed to develop in tuberculous ulcers. (Cordua, Pepper, Edsall.) Heredity of carcinoma has been proved in only a few cases. Individual causes were thermal, chemical, and mechanical irritation sufficiently powerful to cause productive processes of the mucous membrane. (Zenker.) The constant use of concentrated forms of alcohol has been held responsible; also rapid eating of too large or too hot portions of food; above all, hard foreign bodies (pieces of bone). Occasionally leucoplakia has been observed in the œsophagus similar to that of other mucous membranes, coincident with carcinoma of the œsophagus. (v. Hacker, Knaut.) As carcinoma develops in other situations where there is leucoplakia, it is possible that here also carcinoma may develop on the base of a leucoplakia. Œsophagoscopy offers the best means of determining the manner of development of carcinoma.

Symptoms.—The most prominent symptom of carcinoma of the œsophagus is dysphagia. The manifestations are those of a slowly advancing stenosis.

Carcinomatous infiltration causes a rigidity of the canal, in consequence of which peristalsis is impaired. Marked dysphagia may therefore exist even where there is only a slight stricture. At the onset of the disease solid particles of food are caught, and must be dislodged by swallowing water. In the course of time particles of food are regurgitated, fluids descending with a gurgling sound. Semisolid food still passes the constriction. Finally only fluids can be swallowed. According to the level at which stenosis is situated, regurgitation takes place immediately or some time after eating, when a greater quantity has accumulated. This regurgitation may take place quietly and is very different from vomiting. Particularly in the later stages there are gagging and retching, which are extremely annoying to the patient. This is particularly true in regard to the tough mucus which accumulates above the stenosis, but infrequently mucus is mixed with streaks

of blood, to which the patient himself is apt to draw attention and which point to existing ulceration. Decomposition of the tumors causes the mucus to become putrid and ichorous, the patient suffering from fetor. Occasionally particles of tumor are mixed with the mucus; such an occurrence may cause the symptoms suddenly to improve for a time. Food can again be swallowed, and consequently the general condition is improved. If a strip of mucous membrane 1 cm. wide remains free from carcinoma, there may be no difficulty in swallowing. (Liechtenstern.)

As a rule carcinoma of the oesophagus produces pain. The patients complain of a sense of burning or pressure in the throat or chest, particularly while swallowing. In this connection there may be painful spasm. (v. Ziemssen.) Pain may be severe even before there is dysphagia. (Hamilton.) The pain is described as drawing or tearing in character; it is frequently perceived in the back, radiating thence to the shoulders and back of the neck. Pain has no diagnostic value, as it may be absent in some cases. Furthermore, the majority of patients do not refer the pain to the site of disease. According to v. Ziemssen, the occurrence of pain at night is of greater significance.

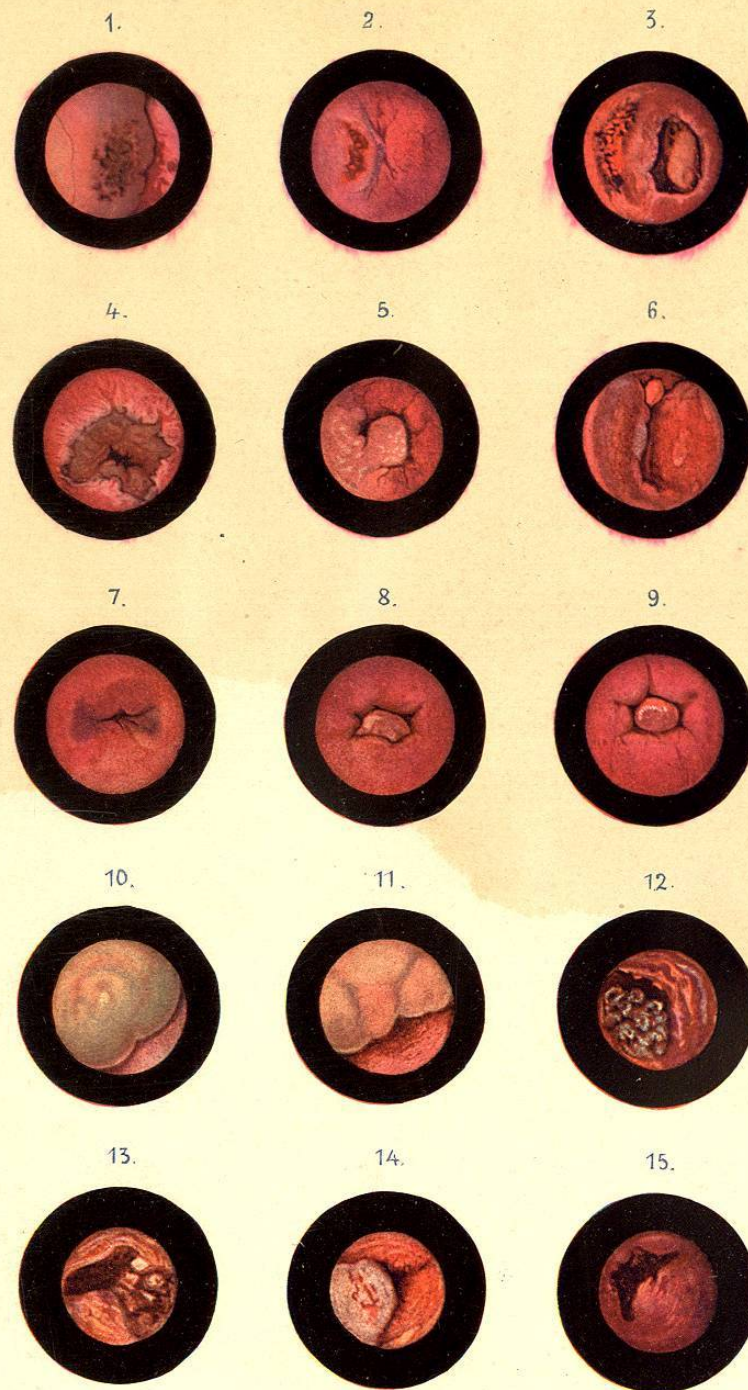
Emaciation and exhaustion are at first caused by dysphagia; later they result also from the malignant pathological process.

Marked inanition occurs in case of cicatricial stricture; but in carcinoma there is in addition hectic fever, caused by the absorption of products of decomposition resulting from necrosis of the tumor. Swelling is found only in tumors of the cervical portion. In most cases swelling is due to tumor of the lymph-glands, which may undergo softening and form abscesses. As in the case of other tumors of the thoracic cavity, particularly those of the posterior mediastinum, there are occasionally found hard glandular swellings above the clavicle on the side corresponding to a deep-seated carcinoma of the oesophagus or the cardia of the stomach.

v. Hacker reports a case in which the presence of a hard lymph-gland the size of a bean in the left supraclavicular fossa led to the diagnosis of carcinoma of the cardia, although other surgeons had never been able to find a constriction when examining with bougies.

There are a number of symptoms that occur in cases of carcinoma of the oesophagus which indicate that the disease has made considerable progress. In about one-sixth of the cases there is contraction of the corresponding pupil. (Hitzig.) As a rule the left pupil is affected. This symptom is due to pressure on the sympathetic nerve. It is not necessarily accompanied by recurrent paralysis. The latter symptom does not so much indicate the seat of carcinoma, but points to involvement of the lymph-glands, especially where the right recurrent nerve is affected. The left recurrent nerve, which extends lower down, may become surrounded by carcinoma. Adhesions with the recurrent nerves may lead to attacks of dyspnoea. The latter may become so severe that tracheotomy becomes necessary. This may happen before signs of dysphagia have appeared, so that the symptoms are

PLATE II.



Views of Carcinomata of Oesophagus seen in Oesophago-scope at Various Depths. Figs. 7, 9, and 14. Carcinoma of Cardia of Stomach at Depths of 43½ and 46 cm.

referred to the larynx. (Goisque.) Even carcinoma in the region of the bifurcation may lead to dyspnoea. In this event there is said to be a difference in the respiratory function of each lung.

If carcinoma advances toward the vertebral column, compression or destruction of the spinal cord may lead to paraplegia, either after rupturing through the vertebræ or by advancing along the intervertebral foramina. If at this time the symptoms of stenosis of the œsophagus are not marked, they may simulate those of caries of the spine. (Page.) In a number of instances vasomotor and trophic disturbances of the nails were observed accompanying existing carcinoma of the œsophagus. (Bard.)

Diagnosis.—Certain important diagnostic points may be derived from the history. Very frequently the absence of any traumatic or other etiological factor, combined with slowly increasing manifestations of stenosis, would be more in favor of neoplasm than cicatricial stricture. Taking into consideration the age of the patient, if the latter is of the male sex and the above-mentioned symptoms are present, character of dysphagia, emaciation, cachexia, a diagnosis of malignant new growth will be correct in 9 out of 10 cases. (Butlin.)

On palpating the neck a tumor or indistinct induration may occasionally be felt. This may be caused by the primary tumor; but as a rule these swellings are only glandular metastases. Examination with bougies may corroborate the former probable diagnosis, and will offer information as to the existence and site of the stenosis.

However, examination with bougies possesses certain disadvantages; thus no obstruction may be found even where carcinoma is present. This may be due to the fact that the tumor is still small, and the bougie glides past if the latter is not skilfully advanced, and unless every projection of the œsophageal wall is carefully palpated. Examination may be negative also where the tumor has undergone necrosis and the portions projecting into the lumen have become destroyed. If a hollow bougie is employed in conducting the examination, and provided the carcinoma has become ulcerated, particles of tissue may remain caught in the fenestrum of the instrument and the diagnosis positively determined by the examination of these fragments. Kelling constructed his instrument with a guarded sponge for the purpose of removing portions of tumor for examination. The safest way of performing exploratory section is by the aid of the œsophagoscope. The precaution should be observed, however, to grasp only with forceps tabs of tissue projecting into the lumen, and not to cut too deep, in order to avoid producing severe hemorrhage. If hemorrhage does occur, the bleeding site should be touched with cotton wet with ferric chloride, silver nitrate, or ergotine "Bombélon." (v. Hacker, Rosenheim.)

Œsophagoscopy is certainly the safest aid to diagnosis, though it must be admitted that in the initial stages before ulceration has ensued or before distinct cancerous protuberances can be recognized one

must frequently be satisfied with a probable diagnosis. In many cases this method will enable the surgeon to make an early diagnosis of carcinoma, and to differentiate carcinoma from other diseases. Latent carcinoma of the œsophagus can probably always be recognized on direct inspection.

The œsophagosopic findings, as described by v. Hacker, are the same for the different levels of the œsophagus. In the initial stage there is infiltration of the mucosa. This can be recognized by the fact that at the site of infiltration the wall is rigid and does not move during respiration; on inspiration the lumen of the œsophagus does not open. Later, a more circumscribed portion bulges forward. The mucous membrane covering the latter is paler or more cyanotic; the lumen has the form of a slit. There may also be numerous very small papillary excrescences distributed over an unchanged mucous membrane, producing an appearance like that of a cat's tongue. Where carcinoma invades the submucous tissues, contraction of the latter may throw the mucous membrane covering this portion into fixed longitudinal folds. At the same time there may be the formation of a funnel, which, in distinction to that found in cicatricial stricture, does not show a bulging similar in appearance to the mouth of the cervix when the tube is advanced, and which is characterized furthermore by the absence of cicatricial tissue. The escape of bloody mucus from the contracted lumen would point to ulceration lower down. Frequently in carcinoma there are areas of leucoplakia very similar in appearance to those of the tongue. During the transition into ulceration epithelial vesicles frequently occur, which later develop into confluent ulcers. Carcinomatous proliferation takes place in the floor of these ulcers. They often present the appearance of a raspberry. At this stage the border of the mucous membrane is frequently notched, bleeding easily. If transition from normal mucous membrane to ulceration progresses circularly at the same level, the picture will be that of a ruptured drum-head. The ulcer itself is generally covered with reddish-gray granulations, the latter showing a yellowish or whitish deposit; more rarely they appear red, as if freshened.

Exploratory resection of such a projecting, fluttering portion with œsophageal forceps will render a positive diagnosis possible. If the ulcer invades the deeper tissues, the muscular layer is exposed, showing a loop-like arrangement. It is notable that not infrequently carcinoma of the lower portion of the œsophagus extends directly to the stomach, while carcinoma of the cardia extends to the œsophagus. This secondary extension to the œsophagus will not exert any influence on the course of the disease, as the symptoms of existing stenosis would only be increased. Such carcinoma of the cardia may cause difficulty in swallowing and lead to cachexia just as carcinoma of the œsophagus does. Frequently where it is believed that a bougie has been passed into the stomach without meeting obstruction the obstruction was actually situated lower down. It may be assumed with a certain degree of certainty that where carcinomatous stenosis is present in a

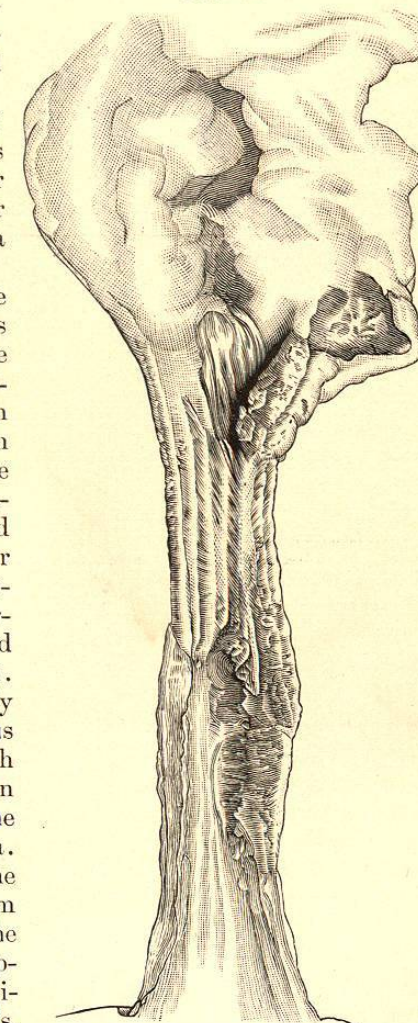
male, and is situated more than 40 cm. from the teeth (up to 45 cm. or further), we usually have to deal with carcinoma of the cardia. In this connection it is interesting to note a case described by v. Hacker in which carcinoma of the cardia extended to the œsophagus, beneath the mucous membrane, and in which autopsy showed that cylindrical cell carcinoma was situated beneath the squamous cell epithelium of the œsophagus.

Prognosis.—The prognosis of carcinoma of the œsophagus is very unfavorable. Sooner or later it causes death, and so far it has been impossible to effect a cure, even by resection.

The average duration of the disease is one year, or two years at the most, counting from the onset of the symptoms. Frequently death takes place within a few months, or even within six or seven weeks, after the first manifestations of the disease. Still, a patient observed at the Innsbruck clinic died four years after a diagnosis of carcinoma had been positively determined by œsophagosopic and microscopical examination. Either death takes place slowly from inanition and carcinomatous cachexia, from perforation, with subsequent septic phlegmon (ichorous pleuritis), or with the typical picture of pyæmia. Where there is rupture into the air-passages death results from pneumonia or gangrene of the lungs. Death takes place rapidly and suddenly where carcinoma ruptures into large vessels. Erosion of tumors may take place through secondary glandular tumors and lead to external hemorrhage. If carcinoma involves larger veins, as the azygos vein, for instance, thrombosis may extend from the latter to the heart, and thus death may result from the latter or from cerebral embolism. (Klemperer, Leichtenstern.)

Perforation into the air-passages is the most frequent, and more

FIG. 42.



Carcinoma of the œsophagus involving the adjacent portion of the stomach.

commonly takes place into the trachea or into the left bronchus. Less frequently rupture takes place into the lungs; rupture into the pleura is still less frequent. In about 60 per cent. of the cases carcinoma produces metastases. (Petri, Zenker.) The neighboring lymph-glands are first involved. Tumors of the cervical and supraclavicular glands are frequently found, the latter most frequently on the left side. Glands in the mediastinum undergoing decomposition may cause abscesses. Metastases of the skin are rare. (Charles, Levit, Pigger.)

Treatment.—The treatment comprises the following operative methods: resection of the œsophagus, œsophagostomy, gastrostomy. The non-operative methods: dilatation with bougies or stretched rubber drains, and dilatation by permanent tubage.

RESECTION OF THE ŒSOPHAGUS.—In the majority of cases carcinoma of the œsophagus is not accessible to radical treatment. Such radical treatment always requires resection. Even transitory results have been obtained only in carcinoma of the cervical portion. Considering primary carcinoma alone, resection was performed in only 15 cases, of which 5 (or 33.33 per cent.) died as the result of the operation. The further below the cricoid cartilage carcinoma is situated, the more dangerous is operation and the less prospect of success. Possibility of resection will be determined by the extent of the tumor and the strength of the patient. It is out of the question to speak of a radical method of treatment, even if in single instances patients have lived some time after operation (Czerny, one and a quarter years; Mikulicz, eleven months; Garrè, one year). All died from recurrence.

In a number of cases preliminary operations were performed, such as tracheotomy, œsophagotomy, gastrostomy.

Only under exceptional circumstances will tracheotomy enter into consideration, where, for example, it is impossible to determine whether carcinoma originated in the larynx or in the œsophagus. The relations are different where it has been determined that carcinoma extended from the œsophagus to the air-passages, and where a portion of the latter must be removed. De Quervain is correct when he recommends opening the air-passages, even in these cases at the end of the operation, in order to prevent the entrance of blood into the air-passages, and infection of the wound with mucus from the trachea (putrid bronchitis being present in the majority of cases). Cough excited by the presence of the canula interferes with the operation.

Œsophagotomy for diagnostic purposes should be avoided, as exploratory section can be performed through the œsophagoscope: and if resection is performed several days later, it is necessary to work through cicatricial tissue. Gastrostomy before the radical operation is well adapted for the purpose of improving general nutrition. It offers the great advantage that for a time feeding with the stomach-tube can be avoided, and thus the wound be allowed to heal without interference. If, as in the case of Quervain, the œsophagus cannot be reconstructed, the fistula can be employed to feed the patient during the rest of his life.

The operation is performed in the following manner: An incision is made along the inner border of the sternomastoid. This should be sufficiently long to provide ample room for inspection. It should be made on either the right or the left side according to the seat of the tumor, or it can be made on one side, and then extended from the clavicle in a curve to the other side. In order to obtain more space the sternal attachment of the sternomastoid may be divided. (De Quervain.) The œsophagus can then be exposed as in œsophagotomy. If one of the lobes of the thyroid gland has been infiltrated with carcinoma, or if it cannot be sufficiently displaced on account of struma, it is removed. In such cases the recurrent nerve must be carefully watched for. Resection should be carried well into sound tissue, not too near the boundary of the tumor; sometimes, however, this has been found impossible. Occasionally a bridge of mucous membrane may be allowed to remain, especially at the posterior wall. This is very important in bringing the ends of the œsophagus together. If, after circular resection, the cut ends of the œsophagus are not more than 4 cm. apart, it may be possible under circumstances to suture them directly (according to the method of circular enterorrhaphy, in two layers). (Czerny.) Otherwise attempts must be made to suture the lower end into the lower angle of the wound, and subsequently to perform an œsophagoplasty. If resection has been carried well down into the thorax (De Quervain) (as far as the level of the arch of the aorta), this will be impossible; the lower end can then be tied off and allowed to drop back. Graeve sutured both ends of the œsophagus into the cutaneous wound.

After-treatment is important. Special care should be taken to prevent: (1) mediastinitis; (2) foreign body pneumonia; (3) secondary hemorrhage. If gastrostomy has been previously performed, danger of mediastinitis from the entrance of particles of food need not be feared. In order to prevent the retention of secretion, the dressing should be frequently changed (twice a day in the beginning). It is recommended to have the foot of the patient's bed elevated. If the larynx and trachea are preserved, foreign body pneumonia is not very liable to occur. If those structures were also resected, exact suturing of the trachea and frequently changing the dressing offer the greatest protection, particularly if the patient is fed through a stomach-tube. This treatment, in addition to careful ligation of all divided vessels, is the most efficient means of preventing secondary hemorrhage, as thereby suppuration, which might be produced by the presence of particles of food, can best be avoided.

Resection is frequently followed by marked cicatricial stricture. (In Czerny's second case the patient was obliged to carry a stomach-tube at night for the purpose of dilatation.) This is especially liable to happen where, on account of much tension, direct union can be only incompletely effected. In such cases œsophagoplasty is preferable if at all possible. In carrying out this operation, a portion of the œsophagus is replaced by external skin. If carcinoma has advanced very far,

so that the larynx must also be removed, the mucous membrane of the latter may be employed for plastic purposes, provided it is healthy. (Garrè.) The operation is performed in two stages. According to v. Hacker's description, rectangular skin flaps are first fashioned; those are sutured to the posterior bridge of mucous membrane, provided this was preserved. Where that is not the case, they are sutured to each other. If larynx and trachea were resected at the same time, a bridge-flap may be formed (unless this is rendered impossible on account of the incision employed for resection). Above and below, these flaps are sutured to the posterior circumference of the lumen of the œsophagus or the lumen of the pharynx, and thus a posterior œsophageal wall is formed. At a later stage the pedicles are divided on the right and left side and sutured together to form a canal, and the latter sutured to the anterior circumference of the lumen of the œsophagus or lumen of the pharynx. Above this the skin is sutured, after having been loosened by dissecting away laterally. This plastic operation has been successfully employed a number of times (Poulsen, Hochnegg, Narath, Garrè). For smaller defects a pedicle flap can be sutured with the skin side turned in. (Mikulicz.)

In the thoracic portion resection was attempted only once.

Relm undertook to expose the œsophagus from behind in a man forty-nine years old, on account of disturbed digestion resulting from the flow of ichorous secretion from carcinoma into the stomach. (The technic of posterior mediastinotomy is described elsewhere.) In the above case no tumor could be seen nor felt, and after the pleura had been repeatedly injured, the operation had to be abandoned; death occurred six days later. The cases operated by this method for cicatricial stricture died. (Relm, Llobet.) Mikulicz removed the entire thoracic portion of the œsophagus, which was the seat of carcinoma, through a cervical and abdominal incision. The patient died shortly after.

Under these circumstances surgeons are not justified at present in undertaking the resection of the thoracic portion for carcinoma of the œsophagus, the more so as they are unable to perform a radical operation because the diagnosis is seldom made sufficiently early.

According to Levy's and Biondi's attempts, and according to the unfortunate experience of Mikulicz, resection of the cardia or the abdominal portion of the œsophagus is a more serious operation than resection of the thoracic portion.

ŒSOPHAGOSTOMY.—The technic of œsophagostomy was described on page 48; it is applicable in carcinoma situated high up, where the œsophagus can be opened below the stricture. The results of this operation are not encouraging. Not infrequently there followed ichorous infiltration of the connective-tissue spaces surrounding the œsophagus. This arose from the œsophageal fistula, and was caused by the products of decomposition of necrotic carcinomatous tissues. It appears doubtful whether feeding through an œsophageal fistula is less annoying to the patient than through a gastric fistula; the latter

procedure is certainly easier for the patient to carry out himself. Œsophagostomy deserves consideration only where there is a prospect that resection can be completed, and where it is only discovered at the time of operation that carcinoma is too extensive, and where it is not desirable to make a second incision. Otherwise gastrostomy is preferable.

GASTROSTOMY.—Gastrostomy is indicated where the patient cannot obtain sufficient nourishment by mouth, as shown by loss in the body weight. If the latter is not constant or decreases, gastrostomy should be performed even if the patient is still able to swallow fluids. (v. Hacker.) It is necessary, of course, to employ a method that can be rapidly and easily carried out, and which will effect complete closure of the fistula (method of Witzel, Frank, Marwedel, Kader); the formation of a sphincter according to v. Hacker, or, still better, combining this method with Lucke's of forming a canal.

The earlier the operation is performed, the better will be the results of gastrostomy. In other words, the operation should be performed as soon as the diagnosis has been positively made. But even where the diagnosis is doubtful, gastrostomy may save the life of a patient in those cases, for example, in which there are fissures in the region of the hiatus of the œsophagus which may produce manifestations of stenosis similar to those caused by carcinoma. It is true that gastrostomy cannot check the progress of the disease, but it may inhibit ichorous decomposition, which is caused by the retention within the ulcer of putrid remains of food. As a result of the operation the carcinoma may grow less rapidly, as continuous irritation caused by food passing through the constriction, and the pain associated with the latter, are removed. About the only contraindication to gastrostomy is putrid bronchitis (v. Hacker), as this would indicate extension of carcinoma to the air-passages. Unfortunately patients and physicians frequently decide upon operation too late, and for that reason statistics show a high mortality. The operation was generally performed when the patient was *in extremis*, when no other method would have availed. If gastrostomy is performed at the proper time, life may be prolonged for months, or for more than a year; otherwise for from three to four months. The patient is made more comfortable, not being allowed to go hungry all the time.

The author had the opportunity of observing several cases at the clinic in Innsbruck in which the patients had been reduced to a miserable condition, but rapidly recovered and were able to work for months. These circumstances are certainly in favor of the operation, which is freer from danger if carried out aseptically, especially if local anæsthesia is employed.

DILATATION WITH BOUGIES AND TREATMENT BY PERMANENT TUBAGE.—Treatment with bougies is very generally employed, especially by the general practitioner, for the purpose of dilating carcinomatous stricture. This is usually successful, as soft carcinomatous tissue readily yields. It cannot be denied that this method is fre-

quently unavoidable, as the patients do not consent to gastrostomy. At the same time it should be borne in mind that the use of bougies produces mechanical irritation, and that the growth of tumors may be excited thereby. It must be admitted also that perforation into neighboring organs may occur during the procedure (Clauditz), though others again have not observed such an accident among many cases (Schmidt).

Dilatation may be performed with conical or cylindrical bougies. Occasionally bougies can only be passed with the aid of the œsophagoscope, for the first time at any rate. Dilatation by means of stretched drainage-tubes is the best and most efficient method. (v. Hacker.) The technic of the latter has already been described. As these drains are only allowed to remain in place for several hours every few days, there is less danger of perforation than where permanent tubage is employed. The latter is preferred by some. (Symonds-Gangalphe, Leyden, and Renvers.) Hard-rubber tubes are employed, or in the case of stricture situated high up, elastic tubes, which can, however, be introduced only after dilatation has been sufficiently effected by passing bougies. In order that they may not become obstructed, fluid diet should be given; they are attached to a thread which is fastened to the ear or to a tooth. They must be worn for weeks or even months. This may result in some very unpleasant accidents. The thread may tear or be swallowed. The tube may be displaced; it may be surrounded or obstructed by carcinomatous proliferation, etc. The thread in the mouth is very annoying to the patient.

In some cases cauterization might be considered. This should be performed by the aid of œsophagoscopy. A specially constructed thermocautery might be employed (v. Hacker), or a galvanocaustic loop. Rosenheim has constructed a porcelain burner for this purpose.

The application of medicaments may also be occasionally employed for the purpose of alleviating suffering. Injecting 1 to 2 c.c. of a 1 to 4 per cent. solution of silver nitrate produces a disinfecting action rather than a caustic one. (Rosenheim.) Eight to ten drops of a 1 per cent. solution of silver nitrate may be given internally three times a day. (v. Hacker.) For the purpose of dissolving the accumulations of tough mucus a solution of sodium bicarbonate (10:100) should be frequently administered. The latter occasionally relieves even severe dysphagia temporarily. (Fritsche.) For the pain narcotics are recommended, at first extract of belladonna, aqua amygd. amar. Rosenheim injected 1 to 2 c.c. of a 3 to 6 per cent. solution of eucaine through an œsophageal syringe. v. Hacker orders 8-10 drops of a mixture of extract of nux vomica (0.1) and aqua lauraceras. (10.0), three times a day. Recently heroin muriate has been successfully employed at the clinic in Innsbruck; 10 drops of a 1 per cent. solution (0.5 grain) were given three times a day.

INJURIES AND DISEASES OF THE ABDOMINAL WALL.

BY PROF. STEINTHAL.

IN injuries of the abdomen, as in inflammations, the abdominal wall plays a secondary part. The force usually expends itself on the abdominal organs rather than on the wall; and the inflammatory process is apt to be marked in the abdominal organs and to extend secondarily to the wall. Still cases occur in which traumatism is confined to the abdominal wall, or in which inflammation begins in it.

With new growths the conditions are different and primary tumors of all sorts occur in the abdominal wall. This is especially true of the umbilicus and its immediate vicinity, a fact which occasions no surprise when one considers the different kinds of tissue which join at this point, and that at different periods of development the intestine and urinary bladder have both maintained an intimate relation with the umbilicus. On this account, and because its inflammatory processes have their own peculiarities, it is well to consider the diseases of the umbilicus apart from those of the rest of the abdominal wall.

CHAPTER V.

INJURIES OF THE ABDOMINAL WALL.

SUBCUTANEOUS CONTUSIONS AND TEARS OF THE ABDOMINAL WALL.

THE simplest form of injury is the subcutaneous contusion manifesting itself by a circumscribed effusion of blood which for a time may be painful but which is soon absorbed. If the injuring stroke is stronger, some vessels of the subcutaneous tissue may be ruptured and give rise to free hemorrhage. The blood may appear in the anterior surface of the thigh.

If the contusion of the abdominal wall is uncomplicated, pain is