

for these growths. They are usually diffuse thickenings, but may be polypoid or sharply circumscribed. The last is usually of very small size. Microscopically, the oesophageal fibromata present the appearance of a *fibroma molle* and are usually well supplied with blood-vessels. Their consistency is soft and elastic. The polypoid fibroma may reach a large size and may, during efforts at vomiting, present itself in the pharynx or mouth, where the tumor may be felt or seen. If the growth possesses a long pedicle it may, when situated in the upper part of the oesophagus, be caught at the entrance to the oesophagus, and pressing upon the epiglottis give rise to severe symptoms of dyspnoea and dysphagia. Large growths may more or less completely block the oesophagus and cause pressure upon the trachea. In these cases there is a constant feeling of pressure behind the sternum, increased on eating, progressive dysphagia, pain radiating to the shoulder blades, dyspnoea, etc. The growth is very likely

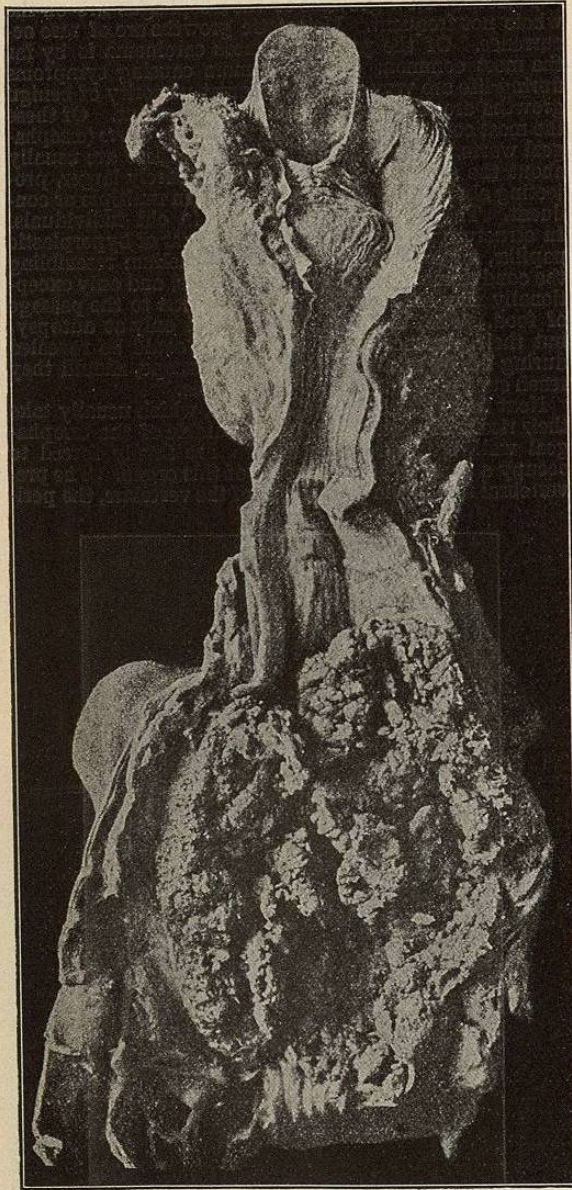


FIG. 3621.—Carcinoma of the Esophagus. (After Kraus.)

to ulcerate and a spontaneous cure may result in rare cases from such ulceration, or from the twisting or tearing of its pedicle. The diagnosis of oesophageal fibroma is made certain by means of the oesophagoscope, by removal of a portion of tissue from the growth, and by microscopical examination. The prognosis is on the whole unfavorable. The patient usually dies of inanition or suffocation.

*Lipomata* of the oesophagus occur very rarely in the form of sharply circumscribed or polypoid growths arising in the submucous connective tissue, most frequently in the neighborhood of the laryngeal and tracheal cartilages.

*Myxoma* of the oesophageal wall has been observed in the form of a polypoid tumor of small size.

*Myomata* of the oesophagus have been observed a number of times. They are usually leiomyomata, but a few cases of rhabdomyoma have been described. The former may develop from the muscularis mucosae or from the muscular coats; these growths may be circumscribed or polypoid and occur most frequently in the lower portions of the oesophagus in the neighborhood of the cardia. They are found at any period of life, are usually small, and do not give rise to symptoms. In the one case of rhabdomyoma which has been carefully described, the microscopical appearances were those of a rhabdomyosarcoma; metastasis into the neighboring lymph glands had occurred.

*Primary sarcoma* of the oesophagus is very rare. Alveolar, spindle-cell, and round-cell forms have been observed in the upper part of the organ, less frequently near the bifurcation, apparently arising from the tissues of the oesophagus wall. In the majority of cases of sarcoma involving the oesophagus, the tumor has extended from some one of the neighboring structures. Lymphosarcoma of the bronchial lymph glands may thus compress and invade the oesophagus. Finally, a widespread lymphosarcomatosis of the oesophagus wall may occur as the result of such extension. Ulceration, hemorrhage, etc., may follow. The ulcer may be covered by a growth of thrush; secondary infection and gangrene may result. Only one case of primary lymphosarcoma of the oesophagus has been reported. The diagnosis of sarcoma of this organ rests upon the presence of symptoms of oesophageal obstruction, the use of the oesophagoscope, and the removal of a portion of tissue for microscopical examination.

*Dermoid cysts* are very rare. They have been observed in the upper portion of the oesophagus or lower part of the pharynx. The *congenital cysts* lined with columnar cells, which have been observed in the oesophagus wall, are to be classed as *simple teratoid cysts* due to anomalies of development. They represent remains of the original communication between oesophagus and trachea.

*Carcinoma*.—This is the most common and important of the oesophageal neoplasms. It is almost always squamous-celled in character (*epithelioma, canceroid*), arising from the squamous cells of the mucosa, and exhibiting more or less horny change and formation of epithelial pearls, as is the case with the epithelioma of the skin. Only in rare cases is the primary cancer of the oesophagus of the columnar-celled type (*adenocarcinoma*). In such cases the growth takes its origin from the cells of the mucous glands, or from congenital cysts lined by columnar cells and lying in the walls of the oesophagus. Occasionally the cancer arising from the gland cells may take on the appearance of a carcinoma simplex, a carcinoma medullare, or a scirrhus carcinoma, etc., but these forms are very rare.

Oesophageal epithelioma (Fig. 3621) is not an infrequent disease. It is found more often in males than in females. The level of the bifurcation is most often involved. It has a tendency to grow in ring shape about the lumen, and in this way gradually to cause stenosis. As the cancer increases in size it quickly ulcerates. In this way a large part of the tumor may be lost and the stricture reduced. About the ulceration, the mucosa shows carcinomatous infiltrations and small secondary nodules, which may also ulcerate. In other cases the edges of the primary ulcer may be nodular, greatly thickened, and firm, causing marked stenosis. The oesophageal wall above the cancer is usually hypertrophic and the lumen dilated. Proliferation of connective tissue about the ulcer may lead to the appearance of a scirrhus cancer. Very frequently a portion of the growth is soft, rapidly growing, and necrotic, while the remaining portion is very hard, composed largely of scar tissue. The greater the connective-tissue formation the more marked the stenosis. In the majority of cases only one cancerous nodule of large size is present; only rarely are there multiple cancerous foci. The oesophageal mucosa about the cancer, and particularly the mucosa of that portion of the lumen which is situated above the stenosis, usually shows a marked chronic congestion or inflammation.

Oesophageal cancer occurs most often between the ages of fifty and sixty years. Cases have been observed in young individuals. The etiological factors are no better known than are those of carcinoma elsewhere. It is significant that the most common seat of the growth is at the narrowest portion of the lumen. The condition is more common in smokers and drinkers, and it is probable that chronic irritation here, as elsewhere, favors the development of the neoplasm. Foreign bodies, burns, healed ulcers, etc., have been regarded as etiological factors. The course of the disease usually extends over one year, often over a shorter period. Death takes place usually from inanition due to the stenosis, to a perforation or to hemorrhage, or from fatal complications due to metastasis or extension of the tumor.

Beginning in the mucosa from a proliferation of the epithelium the carcinoma cells infiltrate the submucosa and musculature as far as the outer fibrous covering. The wall first becomes thickened, its original elements undergo atrophy, and the affected portion of the wall is replaced by carcinoma tissue. Necrosis of the carcinoma cells follows, ulceration of the surface occurs, and there is a greater or less formation of scar tissue. As a result of the ulceration perforation into the trachea, bronchi, lung, mediastinum, pleura, pericardium, or large blood-vessels may occur. Erosion of the vertebral column may be produced. Perforation into the trachea, bronchi, or lung is of most frequent occurrence, death resulting from gangrene or purulent pneumonia. Occasionally the carcinomatous infiltration may involve the trachea and bronchi, or even the heart. Erosion of the aorta, carotids, or pulmonary vessels may cause fatal hemorrhages.

In many cases the cervical lymph glands and the connective tissue of this region show extensive carcinomatous infiltration, and the neighboring structures may suffer greatly from pressure. As a result of pressure upon one or both of the recurrent laryngeals, either by the primary tumor or by enlarged carcinomatous lymph glands, paralysis of one or both vocal cords may result. The changed character of the voice, in connection with obstruction to the passage of food through the oesophagus, is an important diagnostic symptom.

Metastases in distant organs occur first in the liver, lungs, and bones. Except in rare cases local metastases in the bronchial, tracheal, and epigastric lymph glands are always present.

The most extensive carcinomatous infiltration of the oesophagus wall may exist without the occurrence of symptoms directly referable to this organ. In some cases the only symptom is progressive emaciation and weakness. In the majority of cases the earliest symptom is dysphagia, which progresses rapidly so that the patient soon becomes emaciated. Regurgitation of food takes place immediately after swallowing if the cancer is situated in the upper portion of the lumen; after some time has elapsed, when the growth is in the lower part, particularly if the lumen above the stenosis is much dilated. The regurgitated food may contain pus, blood, or portions of necrotic cancer tissue. Pain may be constantly present or entirely absent; or present only when food is taken. It may be very severe, of a burning character, or there may be simply a dull pressure, located behind the lower part of the sternum, and radiating to the shoulder blades. Marked dyspnoea may result from the pressure upon the respiratory passages.

The enlargement of the cervical lymph glands may occur early and indicate the nature of the disease. Pressure upon the recurrent laryngeals, causing paralysis of the vocal cords, is not infrequent. Disturbance of the sympathetic may cause oculo-pupillary symptoms (miosis, retraction of the lids, narrowing of the palpebral fissure, etc.). Erosion of the cervical vertebrae, pressure upon the brachial plexus, etc., may give rise to paralysis of the upper extremity. The occurrence of perforation into the respiratory tract, pleura, etc., is followed by characteristic symptoms on the part of the region involved. Emphysema of the skin of the cervical region and of the mediastinal tissue may occur. Trophic disturbances in the skin and nails have been observed. The urine usually contains albumin, indican, and phenol; in the late stages of the disease acetone, aceto-acetic acid, and oxybutyric acid.

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FIG. 3622.—Spindle-Form Dilatation of the Esophagus Above a Scirrhus Carcinoma. (After Kraus.)

geal wall above the cancer is usually hypertrophic and the lumen dilated. Proliferation of connective tissue about the ulcer may lead to the appearance of a scirrhus cancer. Very frequently a portion of the growth is soft, rapidly growing, and necrotic, while the remaining portion is very hard, composed largely of scar tissue. The greater the connective-tissue formation the more marked the stenosis. In the majority of cases only one cancerous nodule of large size is present; only rarely are there multiple cancerous foci. The oesophageal mucosa about the cancer, and particularly the mucosa of that portion of the lumen which is situated above the stenosis, usually shows a marked chronic congestion or inflammation.

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the normal function of the musculature of the cardia. In complete stenosis the food passed into the esophagus may gradually accumulate above the stenosis and be regurgitated later. The absence of hydrochloric acid, pepsin, peptone, etc., may be taken as evidence that the food had not entered the stomach. The prognosis in all cases is hopeless. Death may be postponed by operative measures.

**ALTERATIONS IN THE LUMEN.**—*Dilatation* is usually secondary to stenosis. Primary dilatation of the esophageal lumen is very rare. The dilatation in the acquired cases may be *general* or *partial*, either the entire esophagus or only a portion of it, above the stenosis, being enlarged. The dilatation of a localized portion of the wall and not the entire circumference, is known as a *diverticulum*. *Primary or congenital* dilatation is usually general—the so-called spindle form. This may also be acquired, usually in chronic esophagitis, or esophagitis secondary to spastic contraction of the cardia. The musculature is usually thickened, and often shows fibroid areas. The ectasia may be enormous, the lumen measuring as much as 30 cm. or more in circumference—as large as a man's arm. At the same time the length is increased, and the organ becomes tortuous. *Secondary* dilatations develop above strictures, but are not present in all cases. (See Fig. 3622.) The dilatation may be fusiform or cylindrical. The muscular coats are usually hypertrophic in the dilated portion. Regurgitation is the chief symptom of esophageal dilatation. Dyspnea may be produced by pressure.

*Diverticula* are of two forms: *pressure diverticula* and *traction diverticula*. The first arises from pressure within the lumen, the latter from external traction pulling out the wall. Pressure diverticula are rare. They are found most frequently at the junction of the pharynx and esophagus, on the posterior wall. They are also called *dorsal diverticula* in contrast to the *lateral diverticula* of the pharyngeal wall. They are rarely very long, and extend downward between the esophagus and the vertebrae. The mus-



FIG. 3623.—Diverticulum of the Lower Third of the Esophagus, with Dilatation. (After Kraus.)

cular wall is weakest normally at the point where these diverticula occur. Local bulging is first brought about by trauma, swallowing of large and firm pieces of food, etc. The bulging is increased by pressure of food, and gradually there is formed a sacular pouch, the mucosa and submucosa bulging out between the muscle bundles of the inferior constrictor of the pharynx (pharyngocele). In some cases muscle fibres have been found in the wall of the sac, and the condition has been regarded as an ectasia due to a disturbance in the closure of the foetal cleft at this point. The latter view is probably more generally accepted than the former. In case the diverticulum becomes filled with food there may result difficulty in swallowing, gagging, and vomiting. Decomposition of the contents of the sac may take place, followed by maceration of the epithelium lining it, secondary infection, ulceration, and phlegmonous esophagitis or periesophagitis. If the sound is passed when the sac is filled, it is very likely to enter the dilated sac; when the sac is empty, the sound may pass by the opening of the sac without entering it. When passed down against the posterior wall, the sound is more likely to enter the sac.

*Traction diverticula* are not rare. They occur usually in the anterior wall, in the neighborhood of the bifurcation, rarely higher or lower. (See Fig. 3623.) They result from the extension of an inflammation of neighboring lymph glands with adhesion to the esophageal wall and subsequent cicatricial contraction, pulling out the wall at the point of adhesion. The sac is usually short; at its tip the remains of a diseased gland are always to be found. The lumen of the diverticulum may point downward, horizontally, or upward. It communicates with the esophageal lumen by a round, oval, or longitudinal opening of varying size. The mucosa about the opening is often puckered. Several diverticula may exist coincidentally. In the majority of cases the lymph glands attached to the diverticula are tuberculous. The condition may have its origin in childhood. Usually traction diverticula exist without symptoms. Through perforation of the sac chronic purulent periesophagitis may be set up, with extension to pleura, pericardium, lungs, etc. In this way the most severe symptoms may arise and the case reach a fatal termination.

*Stenosis* of the esophagus may be *congenital* or *acquired*. In the latter case partial or complete obstruction of the lumen may result from foreign bodies, inflammatory swellings, phlegmon, growths of thrush, tumors; or cicatricial contraction of the wall following corrosive poisoning, syphilis, diphtheritic inflammation, trauma, etc.; or from changes in the neighborhood of the esophagus, such as enlarged lymph glands, aneurisms, tumors of the lung or pleura, etc. A number of cases of esophageal stricture following ulceration of the esophagus in typhoid fever have been observed. The characteristic symptoms in all cases are dysphagia and regurgitation of food.

**RUPTURE OF ESOPHAGUS.**—This condition is rare. It may be due to trauma or to excessive internal pressure. It is reported as occurring in the healthy esophagus as a result of prolonged vomiting; usually after a full meal, or in a condition of intoxication. It is probable that in some of these cases some pathological weakening of the wall was present. The condition is invariably fatal.

**FOREIGN BODIES.**—Among the foreign bodies reported as gaining entrance to the esophagus are bones, leeches, needles, false teeth, etc. Needles may pass out through the wall and be found in other parts of the body. Sharp-pointed or rough bodies are most dangerous, as they may enter the wall of the organ and give rise to a phlegmonous esophagitis, which may extend to the lungs, pleura, or pericardium. In other cases the foreign body may lead to erosion of the large vessels. Complete obstruction of the lumen may be caused by false teeth. Gangrene due to pressure usually results. The entrance of foreign bodies into diverticula may lead to perforation. The fungus of actinomycosis may gain entrance through the lodgment of bits of straw, chaff, etc., in the esopha-

geal mucosa. (For general treatment of diseases of the esophagus, see *Stomach, Surgery of the*.)

*Aldred Scott Warthin.*

**ESOPHAGUS. (SURGICAL.)** See *Stomach, Surgery of the*.

**CESTRUS.** See *Insects, Parasitic*.

**OIDIOMYCOSIS OF THE SKIN.** See *Dermatitis Blastomycetia*.

**OJAI HOT SULPHUR SPRINGS.**—Ventura County, California. ACCESS.—Via Southern Pacific Railroad to Ventura, thence fifteen miles by stage to springs.

This resort is beautifully situated in Waterfall Canyon, about five miles from the thriving village of Nordhoff. The altitude of this location is about one thousand feet above the sea level. The surrounding scenery is very fine, and the vicinity affords excellent hunting and fishing. The springs flow about fifty thousand gallons per hour, and have a temperature ranging from 60° to 104° F. Several of the springs are carbonated, and others are sulphureted. Among the well-known springs are the Fountain of Life, St. Jacob's Well, and the Mother of Eve Springs. These Ojai waters contain the carbonates and sulphates of sodium, potassium, and magnesium, the carbonates of iron and lime, silicates, and carbonic acid and sulphureted hydrogen gases. Many stiff-jointed, rheumatic, and gouty persons repair to these springs for relief, and it is stated that a fair percentage of them are not disappointed in their quest. Good accommodations are provided for visitors. *James K. Crook.*

**OJAI VALLEY, SOUTHERN CALIFORNIA.**—This little valley, said to be one of the most beautiful spots in Southern California, is situated in Ventura County, about sixty miles northwest of Los Angeles, and about fifteen miles from the coast. It has an average elevation of from nine hundred to twelve hundred feet, the upper part of the valley being the highest.

It is about fifteen miles in length, and from two to four miles wide. It is "entirely surrounded by the San Rafael and Santa Inez ranges, which rise on the east to a height of six thousand feet. It is thus well sheltered from harsh winds and partly also from the sea fogs" (Solly).

Nordhoff is the principal town with a population of eight hundred or more, and is the terminus of a branch railroad from San Buena Ventura. The upper Ojai is noted for its orchards, while the lower Ojai is devoted to beans and grain. Fruits of various kinds also thrive here. The opportunities for camping and shooting are abundant, deer, quail, and other small game being plentiful. The horseback rides are very attractive in this "country of beautiful views."

The following table, compiled from data given by Solly ("Medical Climatology"), will indicate the character of the climate:

CLIMATE OF OJAI VALLEY, TAKEN AT OR NEAR NORDHOFF.

	Jan.	Feb.	March.	April.	May.	Dec.	Winter.	Spring.	Year.
Temperature for 1892.							1893.	1893.	1893.
Average (degrees F.) mean.	52°	53°	54°	56°	62°	50°	51°	54°	58°
Average mean	52	53	54	56	62	50	51	54	58
Maximum for 1892	78	79	85	82	100	77	85	95	
Minimum for 1892	27	28	31	34	25	26	26	32	
Humidity—									
Mean relative (January and February)							66%	65%	
Fogs, mornings							4	28	
Rainfall, inches							12.82	9.23	27.84
Rainy days							14	8	

The climate, it will be seen, is a very mild, equable one in the winter and spring, with a comparatively dry

air, and slight rainfall; in brief, it represents the well-known characteristics of the Southern California climate for resorts situated some distance from the sea, and, in addition, the modifications produced by the peculiar situation of the valley, shut in as it is by mountains.

This climate is said to be especially favorable for asthmatics, and is also to be recommended for cases of pulmonary tuberculosis, chronic bronchitis, chronic diarrhoea, and nephritis.

The accommodations are only moderate. According to Solly there are pleasant boarding-houses and cottages. Such a locality as the Ojai Valley is rather suited to those who are well enough to take up a permanent residence there, and occupy themselves with the various pursuits of an outdoor life. *Edward O. Otis.*

**OJO CALIENTE.**—Taos County, New Mexico. POST-OFFICE.—Ojo Caliente. Hotel.

ACCESS.—Take Denver and Rio Grande Railroad to Barrancas Station; thence twelve miles by stage to springs.

These celebrated hot springs are located at an elevation of about six thousand feet above the sea level in the region of the ancient cliff dwellers, twenty-five miles west of Taos and fifty miles north of Santa Fé. There is now a commodious hotel at the resort, having accommodations for about one hundred guests. The surrounding country is broken and mountainous, and the climate of the usual delightful New Mexico variety. The hottest summer day recorded at the springs in recent times was 93° F., and the coldest winter day 20° F. The resort is kept open all the year round. The springs are fifteen in number, and vary in temperature from 90° F. to 122° F. Their flow has not been measured, but it is estimated by Congressman Antonio Joseph, the proprietor, at about forty-two hundred gallons hourly. The following analysis was made by Prof. O. C. Marsh:

ONE UNITED STATES GALLON CONTAINS:

Solids.	Grains.
Sodium carbonate	91.52
Magnesium carbonate	1.23
Iron carbonate	5.90
Lithium carbonate	.12
Sodium chloride	22.18
Calcium carbonate	2.42
Potassium sulphate	3.00
Sodium sulphate	7.32
Silica	1.22
Total	135.54

An analysis, made in 1892, of the "New Spring" by W. T. Hillebrand, acting chief chemist of the United States Geological Survey, showed the presence of large quantities of carbonate of sodium, besides salts of lithium, potassium, strontium, barium, magnesium, and iron, with a considerable proportion of carbonic acid gas. The waters here have a great reputation in the treatment of advanced syphilis, chronic induration of the lymphatic glands, gout, and rheumatism. *James K. Crook.*

**OLD AGE.** See *Senility*, and *Death, Physiological Theories of*.

**OLD POINT COMFORT, NEWPORT NEWS, AND VIRGINIA BEACH.**—Old Point Comfort, Va., is situated at the southeastern extremity of Yorktown Peninsula, at the entrance to Hampton Roads, through which the James River empties into Chesapeake Bay. Situated thus it commands a view directly out to sea between Cape Charles and Cape Henry. Directly south of Old Point Comfort, at a distance of about eleven miles, is the city of Norfolk, Va. In a westerly direction from Old Point, seven miles distant, as one passes up through Hampton Roads to enter the James River, is situated Newport News. "All vessels coming down the James River from Richmond and Petersburg, and those entering and leaving the harbor of Norfolk (and the Portsmouth Navy Yard there situated) must pass close to Old