

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

Point Comfort, while the entire sea-going commerce of Chesapeake Bay passes it at no great distance on its way to and from the ports of Baltimore, Annapolis, and Alexandria.

Old Point Comfort is a government reservation, and here is situated the famous fortification of Fort Monroe, the largest of its kind in America, commanding the entrance to Hampton Roads and the approach to the navy yard at Norfolk. The very extensive marine view, the attractions of a large military garrison, combined with a mild climate a considerable portion of the year, render this resort one of the most popular ones in the country. Moreover, it is very easily and comfortably reached from the North, and affords excellent accommodations, though expensive.

The accompanying climatic table based upon observations taken at Norfolk, will serve also to illustrate the climate of Old Point and Newport News, for the three places are so near one another that there can be but little difference in their climatic elements.

CLIMATE OF NORFOLK, VA., LATITUDE, 36° 51'; LONGITUDE, 76° 17'. PERIOD OF OBSERVATION, THIRTEEN YEARS.

	Jan.	Feb.	March.	April.	May.	July.	Oct.	Nov.	Dec.	Spring.	Summer.	Autumn.	Winter.	Year.
Temperature (degrees Fahrenheit)—														
Average or normal	40.8°	42.9°	48.0°	56.3°	67.1°	79.6°	61.0°	49.6°	42.2°	57.1°	77.4°	60.4°	41.8°	59.2°
Average daily range	14.8	16.1	16.9	17.5	17.8	18.1	14.5	14.9	14.2	17.4	17.2	14.4	15.0	16.0
Mean of warmest	47.5	53.2	57.7	64.0	75.9	89.0	70.9	58.7	50.9					
Mean of coldest	32.7	37.1	40.8	47.5	58.1	70.9	56.4	43.8	36.7					
Highest or maximum	80.0	81.0	81.0	82.0	88.0	102.5	89.0	80.0	73.0					
Lowest or minimum	8.0	9.0	16.0	27.0	38.0	60.0	31.0	20.0	6.0					
Humidity—														
Average mean relative	75.5%	70.6%	66.4%	68.2%	68.8%	70.3%	74.7%	72.7%	71.8%	67.8%	71.8%	74.8%	72.6%	71.8%
Precipitation—														
Average in inches	3.89	3.85	4.35	4.29	3.54	5.39	3.96	3.58	3.80	12.18	15.65	12.77	11.54	52.14
Wind—														
Prevailing direction	N.	N. E.	N.	S. W.	S. W.	S. W.	N. E.	N.	S. W.	S. W.	S. W.	N. E.	N.	S. W.
Average hourly velocity in miles	7.5	8.7	9.5	8.9	8.0	6.7	7.7	7.7	7.5	8.8	6.8	7.2	7.9	7.7
Weather—														
Average number clear days	8.8	8.6	10.0	9.5	11.0	8.5	13.7	11.2	10.1	30.5	27.1	35.5	27.5	120.6
Average number fair days	11.2	10.9	10.8	10.5	12.3	14.5	9.6	9.8	11.8	33.6	40.9	29.8	33.9	138.2
Average number clear and fair days	20.0	19.5	20.8	20.0	23.3	23.0	23.3	21.0	21.9	64.1	68.0	65.3	61.4	258.8

TEMPERATURE AND RAINFALL AT FORT MONROE, VA. LATITUDE, 37° N.; LONG., 76° 19' W.

	Feb.	March.	April.	July.	Oct.	Dec.	Spring.	Summer.	Autumn.	Winter.	Year.
Mean temperature (degrees Fahrenheit)	41.81°	49.90°	55.99°	78.73°	61.90°	41.10°	57.34°	77.07°	61.92°	41.77°	59.52°
Maximum temperature	72.00	78.00	91.00	102.00	89.00	69.00					
Minimum temperature	4.00	13.00	31.00	61.00	30.00	17.00					
Mean precipitation in inches	2.72	3.30	2.98	5.34	2.92	4.58	10.17	15.32	10.18	10.67	47.04

A comparison is also given of the temperatures of Norfolk, New York, and Boston for the months of February, March, and April, the season at which "Old Point" is especially resorted to by visitors from the North.

Temperature (degrees Fahrenheit.)	FEBRUARY.			MARCH.			APRIL.			SEASON.		
	Norfolk.	New York.	Boston.	Norfolk.	New York.	Boston.	Norfolk.	New York.	Boston.	Norfolk.	New York.	Boston.
Average daily maximum	53.2°	40.1°	38.6°	57.7°	45.9°	43.2°	64.0°	56.3°	53.2°	58.3°	47.4°	45.0°
Average daily minimum	37.1	25.9	20.1	40.8	31.3	26.7	47.5	40.5	36.1	41.8	32.5	27.6
Average daily temperature	42.9	31.3	28.1	48.0	38.8	34.2	56.3	46.9	43.9	49.1	38.3	35.4

Like Atlantic City, Old Point Comfort is an all-year-round resort, frequented during the colder seasons of the year more especially by visitors from the North, and during the summer by those from the South. As has been said, and as is the case with Atlantic City, the season of February, March, and April is the popular one for Northern visitors and invalids who desire to escape the un-

stable climatic conditions of a Northern spring during these months. One will find at this resort a large amount of sunshine, a comparatively mild temperature, no great amount of rain, and less wind than at Atlantic City. When one considers the ready accessibility of "Old Point" from the North, and its favorable climatic features, its value as a health resort must be regarded as very considerable. The sources of amusement and diversion are also many, and greatly enhance the value of the resort. They are the ever-shifting panorama of the ocean with the constant passing of various craft; the fascination of the military life, such a predominant feature here; the frequent visits of warships; the Normal and Agricultural Institute for colored people and Indians at Hampton, two and a quarter miles distant; and the National Soldiers' Home at the same place; the various shorter or longer excursions by water to Norfolk, Richmond, Virginia Beach, the York River, etc. The Hampton Golf Club and the Country Club are accessible to the guests of the hotels, and are said to be kept in excellent

shape. The links overlook the sea, and at the attractive club house there is a tea room and café, and music on Saturday afternoons. There are also sailing, driving, and bathing in the season. Attention should also be called to

the great advantage of the beach as a playground for children. Such a climate and such a resort are especially to be recommended for those who with difficulty endure the rigors of a Northern winter, and at the approach of spring find themselves in a depressed condition, physically and mentally, without being seriously ill. It is also to be recommended for convalescents from various acute diseases,

for those who are recovering from the effects of an operation, and for scrofulous children. For the aged, the feeble, the neurasthenic, and for weakly children it offers, for a portion of the year at least, a mild and pleasant asylum. It is said to be immune from malaria. It can hardly be recommended for those suffering from any serious disease of the respiratory organs or from renal disease.

As a half-way station between the North and the more Southern resorts in Florida, Georgia, and South Carolina, "Old Point" proves serviceable in the late autumn and in the spring.

There are two large and well-appointed hotels at "Old Point," the "Chamberlain" and the "Hygeia," with enclosed sun piazzas, affording excellent accommodations the year round. It is probable, also, that in the vicinity private boarding-houses and cottages can be found for those desiring less expensive accommodations than these luxurious hotels offer. The methods of reaching this resort are many and good. One can go by rail to Cape Charles and from there by steamer across the bay, or by rail all the way via Richmond; or one can make the trip from Boston, New York, Baltimore, and Washington by water.

Newport News, while possessing a similar climate, has less in the way of attractions to offer than Old Point, and is not so popular a resort, though it possesses much of historic interest. Here is located an extensive ship-building plant, with an immense dry-dock. It is also a port of importance. The Hotel Warwick offers good accommodations, and for one who desires a quieter existence than that at Old Point, Newport News would appear to be the more attractive of the two. It is reached by boat from Norfolk.

Virginia Beach is situated eighteen miles east of Norfolk, with which it is connected by rail, and six miles south of Cape Henry. It has a fine and extensive beach, affording good surf bathing, and is protected landward by extensive pine forests. The average winter temperature is 54° F, and the extremes for the year 34° F.

The climate is equable and mild and the soil dry. The Princess Anne Hotel is well appointed and offers excellent accommodations and food. The attractions are boating, bathing, fishing, shooting, and horseback riding. This climate and resort "are adapted for cases of chronic nephritis, bronchitis, overwork, and neurasthenia." (Hinsdale.)

**OLD SWEET SPRINGS.**—Monroe County, West Virginia. POST-OFFICE.—Old Sweet Springs. Hotel.

ACCESS.—Via Chesapeake and Ohio Railroad to Alleghany Station, where Concord coaches meet all passengers for the springs. The location of Sweet Springs is more open than is generally the rule in mountain districts. They issue up in a valley of great loveliness, but are surrounded by mountain scenery of surpassing grandeur. The elevation is two thousand feet above the sea level, and the climate during the summer months is of the usual delightful character found in this region. The buildings at the springs are of brick and of a very substantial character, and at the height of the season the place resembles a miniature city. Eight hundred guests are easily entertained at one time. The main building is about three hundred feet in length, and no expense has been spared to make it one of the best summer hotels in the country. The hotel property embraces a grass farm of two thousand acres, which guarantees an abundant supply of dairy products, while neighboring farms furnish the best of poultry, mutton, etc. The water of the Sweet Springs is not unpleasant to the taste, but its temperature (79° F.) renders it rather warm for general use in drinking. For bathing, however, it is very agreeable. Two pools have been provided—one for men, the other for women,—each seventy-five feet long, twenty-five feet wide, and from three to five feet deep. The water is so clear that moss-covered stones on the bottom are distinctly visible. There are also warm and hot steam baths of both mineral and freestone water. The following analysis of the mineral water here was made by Prof. William B. Rogers:

ONE UNITED STATES GALLON CONTAINS:	
Solids.	Grains.
Calcium sulphate	13.16
Magnesium sulphate	9.37
Sodium sulphate	6.32
Calcium carbonate	30.05
Magnesium carbonate	.80
Calcium chloride	.15
Sodium chloride	.14
Magnesium chloride	.31
Iron peroxide	.15
Silica	.17
Earthy phosphates	Trace.
Iodine	Trace.
Total	60.62
Gases.	Cu. in.
Carbonic acid	85.86
Nitrogen	4.31
Sulphuretted hydrogen	Trace.
Oxygen	Trace.

This is a very good alkaline-calcic water possessing tonic, diuretic, alterative, and mild cathartic properties. It is valuable in functional disorders of the stomach, and is said to be employed with signal benefit in chronic diarrhoea and dysentery. It has also produced good results in rheumatism and in some forms of neuralgia, as well as in renal and urinary disorders. James K. Crook.

**OLEIC ACID.**—Oleic acid (HC<sub>18</sub>H<sub>34</sub>O<sub>2</sub>) is the acid product of the decomposition of olein, the fluid constituent of natural oils and fats. Under the title, *Acidum Oleicum*, Oleic Acid, the United States Pharmacopœia recognizes the acid "prepared in a sufficiently pure condition by cooling commercial oleic acid to about 5° C. (41° F.), then separating and preserving the liquid portion." Such grade of acid is an oily liquid, yellow or brownish-yellow in color, and having an odor and taste as of lard. On exposure to air it absorbs oxygen and darkens in color. Its specific gravity is about 0.900 at ordinary temperatures. It is insoluble in water, but dissolves completely in alcohol, chloroform, benzol, benzine, oil of turpentine, and the fixed oils. On cooling the acid first becomes semi-solid, and at 4° C. (39.2° F.) congeals to a whitish, crystalline mass.

The medicinally valuable property of oleic acid is that while retaining the physical properties of a fixed oil, the acid is yet of high diffusive power, and, accordingly, upon inunction passes through the unbroken skin into the general circulation, and leaves behind a smooth, soft, and supple, but not greasy condition of the integument. Being an acid it forms salts with salifiable bases, many of which salts are soluble in excess of oleic acid. Such solutions of oleates in oleic acid are found to permeate the skin as readily as the simple acid, and for this reason such solutions form a class of medicines defined as "oleates," and devised as means of medicating the general circulation through the unbroken skin. Oleic acid is used exclusively for the manufacture of these pharmaceutical "oleates." Edward Curtis.

**OLFACTORY NERVE.**—I. ANATOMICAL PART.—The olfactory nerve is the simplest of the nerves of special sense; indeed in its peripheral relations it is in some respects the simplest and most primitive nerve of the body.

Its central relations, on the other hand, are most intricate and cannot be understood without reference to its evolutionary history. In the larva of the lowest vertebrate, the amphioxus (Fig. 3624), the anterior end of the tubular central nervous system opens freely to the outer body surface by a distinct neuropore on the dorso-median surface of the head. In the adult this pore becomes closed, but there persists a pit-like de-

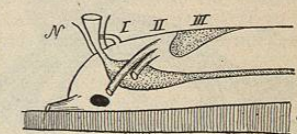


Fig. 3624.—Longitudinal Section Through the Brain of the Larval Amphioxus. *ch.*, Notochord; *N.*, neuro-pore, or sensory pit.